

TASMANIA

REPORT

OF THE

DIRECTOR OF MINES

FOR THE

YEAR ENDED 31ST DECEMBER,

1962



TASMANIA:
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REPORT OF THE DIRECTOR OF MINES

Department of Mines,
Hobart, 30th April, 1963.

THE HONOURABLE THE MINISTER FOR MINES.

I HAVE the honour to present my report on the mining industry for the year ended 31st December, 1962.

The mining industry produced metals and minerals valued at £A32,868,678 for 1962 consisting of metals and minerals produced from Tasmanian ores valued at £A15,437,068 and metals and pigment oxides valued at £A17,431,610 produced from imported ores.

There were increases in the production of copper, gold, lead, silver, tin and zinc but the output of wolfram and scheelite declined. There were corresponding increases in the value of copper, gold, silver and tin, but the value of wolfram and scheelite was lower and the value of lead also declined because of a fall in price even though there was an increase in production. The value of non-metallics increased due principally to a higher output of limestone and clay for use in cement manufacture. Increased production of construction materials also contributed to the higher overall value of the mining industry.

The average number of men employed was 8708 as compared with 8493 in 1961. Employment in wolfram and scheelite mining declined due to market conditions and the overall increase in employment in the mining industry is attributed to greater activity in metallurgical works engaged in the production of aluminium and titanium dioxide and as a result of the establishment of a ferro-manganese industry.

NEW MINES

No new mines were opened in 1962 and all existing mines continued in production.

Exploration of the old Cleveland Mine near Waratah by Aberfoyle Tin Development Partnership has proved the existence of tin ore capable of economic development and present evidence indicates that a large mine will be opened. It is expected that developmental work will be undertaken during 1963 and that productive operations will then be established.

The intense competition offered by fuel oil resulted in a decreasing demand for coal and some coal mines were obliged to restrict production,

Following satisfactory testing in the Department of Mines research laboratories, successful negotiations by a subsidiary of Aberfoyle Tin N.L. with Associated Pulp and Paper Mills Burnie has established a market for the supply of fine clay for paper making from clay deposits in the Gladstone district. It is expected that productive work will commence during 1963.

METAL PRICES

Copper.—The average Australian market price of copper for 1962 was £A305 per ton as compared with £A307 for 1961. The production of the Mt. Lyell Company was disposed of on the Australian market and all sales qualified for the bounty provided under the Copper Bounty Act 1958. This increased the average price received to £334 per ton. Production of copper increased by 2325 tons during the year.

Lead and Zinc.—The prices of both lead and zinc have been unsteady and there have been considerable fluctuations under the influence of over-production and fluctuating demand. Curtailment of lead production by the International Lead and Zinc Study Group in March 1962 was reflected in reduced supplies and an improvement in consumption added to purchase by the American stockpile is likely to result in improved market conditions in 1963. Zinc prices have not fluctuated to the same degree as lead and a reduction in production was not necessary. Towards the end of the year production and consumption were almost balanced.

These market conditions were reflected in Australian prices and lead declined from an average of £A99.3 per ton in 1961 to an average of £A81.6 for 1962. Zinc declined from £A102 per ton in 1961 to £A100 per ton in 1962. Production by Tasmanian mines was not affected and lead produced increased by 327 tons and zinc by 6374 tons.

Tungsten.—The price of tungstic oxide forms the basis for the sale of wolfram and scheelite concentrates. The decline which commenced early in 1961 continued and prices fell from an average of 143s. 2d. per unit for 1961 to an average of 97s. 5d. per unit for 1962. The price at the close of the year was 79s. per unit in Australian currency or 65s. per unit on the London Metal Exchange. The Iron Curtain Countries, Russia, China and North Korea produce more than half

of the world's output of tungsten and the continued selling at a discount by these countries has caused prices to remain at a low level. The position can only be remedied by some producer action to curtail excess production. The position is of serious consequence to Storeys Creek Tin Mining Co. N.L., the principal wolfram producer in this State, and to scheelite mining by King Island Scheelite (1947) at King Island. The latter company was forced to close down in 1958 because of an insufficient price for scheelite but later re-opened when the market price increased. Continued operations at the current price are uneconomic and at the close of the year the Company was considering the future of the mine as a profitable producer.

Tin.—The average Australian price of tin for 1962 was £A1161 as compared with £A1178 for 1961.

During 1961 and the early months of 1962 there was a considerable upward movement in price as a result of the very real gap between production and consumption. Some relief to an uncontrolled price rise was afforded by the gradual release of the Buffer Stock Pool of about 10,000 tons but when this became exhausted the International Tin Council lost its only weapon for controlling price. The United States declared 50,000 tons of tin from its strategic stockpile as surplus and although uncertainty as to methods of disposal caused fluctuations in price it has constituted the only control on runaway prices. The International Tin Council has agreed to raise its price stabilization limits and has fixed £E790-£E850 per ton at which the Buffer Stock Manager may buy, £E850-£E910 per ton at which there will be no operations and £E910-£E965 per ton at which the Buffer Stock Manager may sell tin. This will stabilize a higher return to producers. The Buffer Stock did not operate because of high market price during most of the year, but towards the end of the year the Buffer Stock Manager had purchased a small stock which will enable this scheme of stabilization to operate. The major controlling factor continued to be the policy of the United States in disposing of tin from its stockpile. Future prices depend on demand and whether production can bridge the gap between supply and demand. One survey has estimated production at 135,000 tons to meet an anticipated demand of 175,000 tons.

Australia does not have a surplus of tin for export, but the Australian price is based on the Singapore price which is linked with movements in world prices as reflected by the London Metal Exchange. The Australian price ranged from a high of £A1241 per ton in March to a low of £A1106 in August, with an average of £A1161 per ton. The ruling price at the end of the year was £A1112 per ton. Tin is sold by Tasmanian producers as a concentrate and the price at Launceston is based on a 70% concentrate and adjustments are made for the assay value of individual consignments. The unit price ranged from 214s. 6d. per unit in March to 182s. 4d. per unit in October equivalent to from £A750 to £A639 per ton of 70% concentrate.

The effect of the continued higher price has stimulated tin production which rose from 879 tons in 1961 to 1058 tons (actual) in 1962. Exploration activities have been maintained and as referred to under "New Mines" developmental work is being undertaken at the old Cleveland Mine which will result in the establishment of productive tin mining operations,

EXPLORATION

Active exploration programmes have been continued by several companies but activities have been concentrated on specific areas where ground geological surveys or geophysical surveys have indicated points worthy of closer investigation.

The most significant discovery has resulted from the work by one company which has proved the existence of tin ore at the old Cleveland Mine near Waratah which is capable of economic development. Further investigations are in progress and this will be followed by developmental work and finally the establishment of productive mining operations.

The Broken Hill Pty. Co. Ltd., through a subsidiary Haematite Explorations Pty. Ltd., has retained interest in the search for oil in Bass Strait and has continued with geophysical work and interpretation. A seismic geophysical survey by specially equipped ships is currently in progress.

The Drilling section of the Department was engaged in boring for supplies of underground water, in test boring for foundations and in drilling mineral areas at sites recommended by Departmental geologists. Three diamond drills have been in constant operation. One has been testing coal measures in the Fingal Valley, another plant has been boring a gold reef series near Mathinna and the third plant has been drilling various known mineral occurrences in the Zeehan district at depths below the level of old mine workings. Two churn plants have been engaged in boring for supplies of underground water and in foundation testing work. The new Churn drill which was commissioned towards the close of last year continued the programme of drilling in the St. Helens district to explore the possibilities of locating deposits of alluvial tin capable of economic working. The drilling is still in progress, but results to date have not established grades of wash capable of productive working. The diamond drilling work indicated is to continue and results, even though of no commercial significance, provide valuable information in the investigation of the mineral resources of the State. During 1963 it is planned to re-commence water boring in the Circular Head district and to satisfy a number of applications in Southern areas.

The Savage River iron deposits have continued to occupy the attention of the Department. Close liaison has been maintained with the holder of the licence covering the deposits, and the geological, metallurgical and mining engineering branches of the Department have co-operated in investigations directed towards commercial development of the deposits for steel making.

The geological field programme of the Department has been concerned with mapping in the North, North-West and Western parts of the State. The results of such work are published in the form of geological regional maps, explanatory notes and technical reports. The geological staff were also engaged in examining mining prospects, advising on exploration activities by various parties and in selecting sites for boring for underground water. Surveys were also undertaken and reports prepared on various aspects of engineering geology mainly related to foundations and problems associated with landslips,

COAL

There has been a fall in production from 286,000 tons to 272,342 tons over the last two years and the men employed have declined from 286 to 232. This has been largely due to the competition from oil and when one of the principal consumers converts to oil early next year, coal production will be seriously affected.

The Board of Inquiry appointed by the Government last year to enquire into the relative costs of generation of electricity in Tasmania, with particular reference to the use of coal from the Fingal Valley, published its report which was presented to both Houses of Parliament. The report concluded in the last paragraph of the Findings of the Board that financing the additional annual cost of a thermal station would impose a liability directly or indirectly on power users or taxpayers and such a continuing liability to subsidize an uneconomic project is not justified by the benefits likely to be received by a very small section of the population.

The future stability of the industry is dependent upon producers being able to maintain or expand existing markets in face of the competition from oil.

SAVAGE RIVER IRON ORE

Exploration of the Savage River Iron Ore deposits has been continuous since 1957 and at this stage it is worthwhile to record the progress made.

The Savage River Iron Ore deposits are located on the West Coast and are now accessible by road approximately a distance of 5 miles from the 19 mile peg on the Corinna Road. The deposit has been known since 1898 but a thorough investigation was not commenced until 1957 when the area was reserved by the Department of Mines from occupation under the Mining Act to enable the Department to form some assessment of the worth of the deposit. Geological and geophysical surveys were carried out followed by diamond drilling and ore dressing investigations. In 1961 an Exploration Licence was granted to Mr. E. R. Hudson of Industrial and Mining Investigations of Sydney who undertook to continue diamond drilling, to arrange smelting tests, and to investigate the economics of an integrated steel plant in Tasmania.

The predominant mineral is magnetite and the most useful method of determining the trend of the iron deposits is the ground magnetometer survey. The Bureau of Mineral Resources has worked in the area every summer since 1957 and has completed geophysical surveys over an area nine miles in length and 2000 feet in width. It is known that the iron bearing zone exists over a length exceeding seven miles.

Apart from two drill holes in the northern part of the area, which is now to be examined further, the drilling to date has been concerned with the central area between Savage River and Magnetite Creek where 13 bores totalling 11,293 feet have been drilled. All drill holes intersected iron ore and the results indicate that the iron ore is continuous over at least the length of 6000 feet drilled. A drill hole was put down on the Long Plains deposits and the iron ore intersected was consistent in width and grade with

those drilled at Savage River. From the later geophysical work it must be assumed that the Long Plains deposits are an extension of the Savage River deposits and that the occurrence extends over at least seven miles.

Any assessment of total ore reserves at Savage River at this stage is impossible as insufficient drilling has been done. However, on the basis of the drilling in the centre section an estimate has been made of the quantity of ore that could be extracted from an open cut 400 feet deep and 1 mile long as follows:—

82 million tons of ore

17 million tons of low grade ore of 17.3% iron.

The surface material would assay between 60 and 65% iron and information available to date indicates that this grade may continue to approximately 100 feet below the surface. If this is so, then approximately 23 million tons of ore would be approximately 65% iron and the calculated balance of 59 million tons of ore in the designed open cut would assay 43.8% iron.

As previously indicated the geophysical magnetometer survey has proved the existence of magnetic anomalies over a length of seven miles. The two diamond drill holes in the northern section and the one in the Long Plains area to the south confirm the presence of ore of comparable width and grade at widely separated points and it is reasonable to assume that the ore body will be present where the high magnetic anomaly is recorded. If it is assumed that the ore body could be mined profitably by open cut along this length to a depth of 400 feet then additional inferred ore reserves available could be conservatively estimated at 360 million tons.

Ore dressing and smelting investigations have proved that the ore is suitable for steel production. The absence of suitable coking coals in Tasmania and the availability of a nearby large potential hydro-electric source created interest in the possible use of an electric smelting process. The holder of the Exploration Licence had a parcel of material representing crude ore and concentrates together with a parcel of Tasmanian coal tested in U.S.A. in the Strategic Udy pilot plant. The test was highly successful and demonstrated that both pig iron and specification grade carbon steel could be produced from Savage River iron ore.

As indicated a complete assessment of the potential of the Savage River Iron Ore Deposits has not yet been made, but the holder of the Exploration Licence is actively pursuing his drilling and other investigations and is inviting the interest of overseas companies with the technical capacity and financial resources necessary to establish a steel industry based on the deposits. Development of the deposits to the production stage would involve development of the Pieman River hydro-electric resources, construction of port facilities on the Pieman River, access roads and a town site.

If such developments should occur the benefit to the economy of the State and the level of the employment is obvious, but at this stage of the investigations no definite statement can be made as to likely developments,

LEGISLATION

THE MINING ACT 1929.

The provisions of the Mining Act 1929, were amended to bring the legislation of this State regarding oil leases and atomic substances into line with legislation of the other States and the Commonwealth. The provisions differ in detail to some degree because of the limited area of the State, but the basic requirements governing the issue of leases for productive purposes follow the provisions contained in legislation in the other States.

The major amendment has vested the ownership of oil and atomic substances in the Crown. Provision has also been included in the Act to define the boundaries of the State of Tasmania to embrace the description as contained in the Proclamation of 1825 notifying the separation of Tasmania from New South Wales. The object of the provision is to apply the Mining Act to the waters of Bass Strait which are currently the subject of an exploration licence to search for oil. This provides a clear expression that the legislation applies outside the traditional three mile limit. Other amendments have left the area of oil leases and the rent payable to be fixed according to the circumstances of each case and the royalty on oil has been increased from 5% to 10% which is in accord with the rate payable in other States. It has also been provided that a suitable drilling plant must be erected on an oil lease within six months of the grant and for drilling operations and other development to be carried out in a workmanlike manner and in accordance with good oil field practice. Where the production stage is reached oil must continue to be produced unless an exemption is granted.

Other amendments designed to improve the practical application of the Act relate to applications for leases by persons mining on private

land with the consent of the owner; clarification of the date of commencement of the covenants of leases; power to amend the areas of Special Prospector's Licences and Exploration licences during the currency of such licences; procedures for marking out of areas partially or completely covered by water, and extension of existing provisions covering illegal mining to all mining products.

Certain amendments to the Regulations under the Mining Act 1929, were necessary as a consequence and these have been made.

AID TO MINING ACT 1927.

This Act includes a provision to enable the Minister to mark-out an area of Crown land which may be let to tributors. An amendment was made to the Regulations to enable the Minister to issue an authority to prospect on such land and to impose such terms and conditions including rent and fees according to circumstances. An area surrounding the old Mt. Bischoff Mine has been marked out by the Minister and authorities to prospect and tribute agreements authorizing productive mining are in occupation.

GENERAL.

The legislation administered by the Department is under constant review since it is all of an operational nature and must contain provisions to meet changing conditions and techniques within the mining industry.

There is also a general trend to establish uniform requirements between the States and where general agreement is reached legislation is amended to conform with the standard code agreed upon. At present amendments to the Inflammable Liquids Act and Regulations are being drafted to apply a model code devised by the Australian Port Authorities Association for the handling of dangerous goods.

OPERATIONS AND PRODUCTION

1.—METALLIC MINERALS

CADMIUM

Quantity produced:—

	Tons	Value £
1924-58	1,067	1,054,371
1959	53	85,077
1960	52	83,498
1961	62	98,286
1962	72	128,173
Total	1,306	£1,449,405

This is a by-product obtained by the Electrolytic Zinc Company of Australasia Limited at its Risdon Works from zinc concentrates produced from the Rosebery and Williamsford mines.

COBALT OXIDE

The source of the 1.48 ton of cobalt oxide of value £1652 was the same as that of cadmium above,

COPPER

THE MOUNT LYELL MINING AND RAILWAY COMPANY, LIMITED, QUEENSTOWN
RETURN FOR 1962.

	Tons
Mining—	
Overburden removed	2,351,252
Ore mined (West Lyell)	2,118,133
Ore mined (Crown Lyell)	24,926
Limestone delivered to works ..	10,186
Silica	Nil
Reduction—	
Concentrates smelted	48,631
Crown Lyell ore	10,160
Precipitate smelted (North Lyell and Comstock)	13
Blister copper produced	12,997
Containing Copper 12,902 tons	
Gold .. 7,280 ozs.	
Silver 67,618 ozs.	
Pyrite concentrate shipped	54,629
Total Value of Production	£4,430,710

Average Number of Men Employed—	
Mining—Open cut	248
Underground	67
Other	1,289
Total	1,604

Production from the inception to 31st December, 1962—

Copper	553,445 tons
Gold	585,392 ozs.
Silver	15,955,852 ozs.

Mr. R. C. Vivian, Mining Engineer, Queens-town, reports that a substantial increase in recovery and grade of concentrate was obtained by the change-over from a low lime-Aerofloat circuit to a high lime-Xanthate circuit in the flotation section, as well as by the installation of the two 14-cell banks of Agitair flotation machines. The smelter output rate of copper was increased due to the higher grade of concentrate available, and a substantial decrease in coke consumption was effected. The use of copper bearing siliceous flux, instead of barren silica as previously used, resulted in the reduction of copper losses from the ore being smelted, and thereby an increase in copper production, as well as in the saving of the cost of quarrying and screening barren silica.

The contractor, Utah (Australia) Ltd., engaged on overburden removal completed its contract in October, and the ratio of overburden to ore will return to normal.

The ammonium nitrate-molasses-water mixture recently used almost exclusively for primary blasting of ore in the West Lyell Opencut found disfavour towards the end of the year due to unsatisfactory toe breaking, which is believed to be caused by inadequate mixing and packing in the hole of the explosive. Underground at Crown Lyell, a stope was prepared for longhole drilling and blasting by a sublevel and the mining of a slot from a raise.

In development at Crown Lyell a total of 1544 feet of driving and 468 feet of raising was completed. Diamond drilling consisted of 8 exploratory holes comprising a total of 3078 feet, but no significant results were obtained.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, ROSEBERY

This company, reviewed under Zinc, produced 11,192 tons of copper concentrate containing 1014 tons of copper valued at £309,379.

ABERFOYLE TIN NO LIABILITY—ROSSARDEN

This company, reviewed under Tin, sold accumulated copper-silver residues containing 33 tons of copper, valued at £10,103.

GOLD

Quantity produced—

	oz.	Value £
Prior to 1958	2,451,053	12,951,765
1958	20,976	327,749
1959	20,260	316,567
1960	23,015	359,613
1961	24,528	383,268
1962	28,673	448,017
Total	2,568,505	£14,786,979

COPPER

Quantity and value of production:—

Year	From Tin Ores		From Lead-Zinc Ores		In Blister Copper		In Copper Ores		Total	
	Tons	£	Tons	£	Tons	£	Tons	£	Tons	£
1919-1958	272	103,794	6,964	1,711,473	349,862	44,628,608	404	10,581	357,502	46,454,456
1959 .....	...	...	508	159,873	10,585	3,341,261	...	...	11,093	3,501,134
1960 .....	...	...	609	196,996	10,682	3,460,846	...	...	11,291	3,657,842
1961	34	10,394	769	236,174	10,821	3,322,646	...	...	11,624	3,569,214
1962	33	10,103	1,014	309,379	12,902	3,935,110	...	...	13,949	4,254,592
Total	339	£124,291	9,864	£2,613,895	394,852	£58,688,471	404	£10,581	405,459	£61,437,238

THE MOUNT LYELL MINING AND RAILWAY COMPANY LIMITED, QUEENSTOWN

This Company recovered 7280 oz., valued at £113,750, from sludge in the electrolytic copper refinery.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, ROSEBERRY

Concentrates produced by this Company contained 20,977 oz., valued at £327,764.

STOREYS CREEK TIN MINING CO. N.L. (DORSET TIN DIVISION) SOUTH MOUNT CAMERON

From the tin concentrates of this dredge (reviewed under Tin) 384 oz. of gold, valued at £6007, were recovered.

MISCELLANEOUS

The Endurance Tin Mining Co. N.L., recovered 4 oz., valued at £60 from tin concentrate produced at the Clifton workings.

A little prospecting but no productive work has been done by Messrs. Graham and Bean at the Daylight Mine, Fingal. There is no reported production.

The Hilltop Syndicate spent £4000 on installing a 5-head stamp battery and prospecting, about one mile from Gladstone. Total production was 16 oz. which returned £247. The prospect was found to be of uneconomic grade and work ceased. Average employment was three men.

Other small producers were P. M. Walsh (5 oz.) and W. A. Walsh (3 oz.) of Branhholm and K. S. Kirton (2 oz.) of Gladstone.

IRON OXIDE

Quantity produced—

	Tons	Value £
Prior to 1959	81,988	77,369
1959	5,062	7,395
1960	3,497	5,503
1961	2,309	3,827
1962	4,082	5,870
Total	96,938	£99,964

A. PEARSON, Penguin.

This operator continued to mine the secondary ore at the Iron Cliffs Mine and supplied a cement works with 3998 tons of haematite valued at £5493. Employment averaged two men. In addition 84 tons of limonite valued at £377 was supplied for use as a catalyst in coal gas generation.

LEAD

Quantity produced—

	Tons	Value £
1919-58	282,200	14,491,270
1959	13,223	1,322,305
1960	12,183	1,218,381
1961	10,278	1,026,909
1962	11,605	947,714
Total	329,489	£19,006,579

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, ROSEBERRY

This Company, reviewed under Zinc, produced 12,817 tons of lead concentrates and the total content of the lead, zinc and copper concentrates was 10,988 tons valued at £897,329.

FARRELL MINING CO. LTD., TULLAH

Ore mined and milled was 4397 tons giving 925 tons of lead concentrates containing 616 tons of metallic lead of value £50,374. The silver content is shown under that heading. The average number of men employed was 24 on the surface and 17 underground.

In development driving was carried out in the footwall and hangingwall of No. 6 level and at No. 8 Main Drive South, but failed to intersect payable ore. At No. 7 Level North, a drive between the Main Lode and Quartz Lode carried payable ore, resulting in a stope being opened up over a length of 68 feet.

MANGANESE DIOXIDE

This is recovered as a sludge in the electrolysis of zinc sulphate at the Risdon works of the Electrolytic Zinc Company of Australasia Limited, the original source being the ore in its West Coast Mines. The production of 276 tons was valued at £4708.

OSMIRIDIUM

Quantity produced—

	oz.	Value £
1910-58	31,085	708,471
1959	3	60
1960	.....	.....
1961	.....	.....
1962	.....	.....
Total	31,088	£708,531

PYRITE

Quantity produced—

	Tons	Value £
1915-58	1,202,534	2,343,903
1959	73,000	219,000
1960	53,919	161,757
1961	71,087	213,261
1962	54,629	163,887
Total	1,455,169	£3,101,808

This is produced and exported by the Mount Lyell Mining and Railway Company Limited for sulphuric acid manufacture.

SILVER

Silver is nowhere mined for itself but is a valuable by-product from copper, lead and tin ores. The current producers are shown below:—

Producer	Source	Quantity oz.	Value £
Aberfoyle Tin N.L.	Copper Concentrate	17,266	7,735
E.Z. Co. of A/asia Ltd.	Copper & Lead Concentrate	1,285,874	622,490
Farrell Mining Co. Ltd.	Lead Concentrate	70,689	34,084
Mt. Lyell M. & R. Co. Ltd.	Refinery Sludge	67,618	32,546

SILVER
QUANTITY AND VALUE OF PRODUCTION

Year	From Tin and other Ores		From Silver-Lead Ore		From Copper Ore		From Lead-Zinc Ore		Total	
	Oz.	£	Oz.	£	Oz.	£	Oz.	£	Oz.	£
1919-58	88,148	36,189	17,096,906	2,605,884	3,380,157	558,484	15,492,155	4,649,266	36,057,366	7,849,823
1959	.....	.....	206,455	85,203	31,318	12,947	1,079,389	445,096	1,317,162	543,246
1960	.....	.....	157,637	66,997	45,157	19,192	1,145,762	486,948	1,348,556	573,137
1961	.....	.....	62,576	26,880	48,290	20,770	1,165,529	499,825	1,292,768	554,433
1962	.....	.....	70,689	34,084	67,618	32,546	1,285,874	622,490	1,441,447	696,855
Total	121,787	£50,882	17,594,263	£2,819,048	3,572,540	£643,939	20,168,709	£6,703,625	41,457,299	£10,217,494

SULPHUR

This is produced as sulphuric acid in the roasting at Risdon of the zinc concentrates from the Rosebery and Hercules mines of the Electrolytic Zinc Company of Australasia Limited.

Production of sulphuric acid was 43,798 mono tons, valued at £208,596.

TIN

Quantity produced—

	Tons	Value £
1873-58	143,131	30,409,499
1959	890	942,698
1960	884	920,040
1961	879	1,022,094
1962	1,211	1,403,736
Total	146,995	£34,698,067

ABERFOYLE TIN N.L., ROSSARDEN

Mr. L. W. Morris, Mining Engineer, Launceston, reports that the tonnage of ore milled was 79,210 tons, an increase of 3057 tons over the preceding year.

Actual production was:—

	Concentrate	Metal
Tin, tons	777	562
Wolfram, tons	198	141
Copper, tons	466	33
Silver, oz.	.....	17,266

The amounts shown elsewhere in this report represent sales only. During the year it was decided to instal an exhaust fan on the surface at Brandon shaft and exhaust mine air from No. 2 level. Winze-rise connections were made from No. 4 to No. 2 levels.

Underground development comprised:—

Driving	1,997 feet
Crosscutting	347 feet
Rising and Winzing	507 feet
Total	2,852 feet

Forty-one diamond drill holes were driven for a total footage of 9607 feet. Drilling north of the mine on the Lutwyche prospect suggests a deposit worthy of further examination by underground development. Average employment was 109 men on the surface and 168 underground.

ENDURANCE TIN MINING CO. N.L., SOUTH MOUNT CAMERON.

This company treated 469,600 cubic yards of gravel from the Clifton Workings for the production of 51 tons of concentrate containing 38 tons of tin valued at £43,597. In addition 4 oz. gold valued at £60 was recovered. From adjacent workings 606 tons of kaolin valued at £3282 were produced. The average number of men employed was 40.

STOREYS CREEK TIN MINING CO., N.L., DORSET TIN DIVISION, SOUTH MOUNT CAMERON.

The dredge treated 1,550,000 cubic yards for the production of 123 tons of concentrate containing 91 tons of tin valued at £105,459 and 384 oz. of gold which realized £6007.

Prospecting was continued, 34-16 in. holes being bored for a total of 1309 feet using the Conrad machine and 5-6 in. holes for a total footage of 185. This work was done on the Black Duck McGregor area. In the Mussel Roe area 20-16 in. holes were bored for a total footage of 453. The average number of men employed was 45.

RENISON ASSOCIATED TIN MINES, N.L.,
RENISON BELL.

This company milled 26,287 tons of ore for the recovery of 238 tons of tin in concentrates valued at £274,374, an increase of 67 tons of tin. The average number of men employed was 65 of whom 25 were underground.

Mining was confined to the Battery Workings where 3471 feet of development headings were driven, as well as 945 feet of surface and 1328 feet of underground diamond drilling. At the Federal area 12 holes were drilled a total of 4912 feet from the surface. Development at the Black Face comprised 44 feet of rising.

STAR HILL SYNDICATE—GLADSTONE

This syndicate is now working two faces—one using an 8 in. Gravel Pump driven by a Diesel engine, the nozzle water being delivered by pump driven by an electric motor. The other face is

worked by a nozzle, water pressure for which is delivered by pump driven by an electric motor. Tailings disposal is by gravity through a tail race.

Production for the year was 20 tons of concentrate containing 15 tons of tin valued at £17,208 from 97,500 cubic yards of gravel handled. Average employment was six men.

MUSSEL ROE WORKINGS OF MR. V. WOOD,
PIONEER

From his two working places near the Mussel Roe River Mr. V. Wood treated 52,000 cubic yards of gravel for the production of 30 tons of concentrate containing 27 tons of tin valued at £25,223. Average employment was four men.

BRISEIS TIN N.L., DERBY

This company ceased working the Valley Mine at the beginning of the year in the face of a combination of adverse factors, e.g., heavy shingle, inadequate water supply and a low ratio of recovery to bore value.

In the last quarter Mr. G. Rayner's party of three men worked a face on the Cascade River on tribute to produce 0.8 tons of tin in concentrate valued at £911.

PRODUCTION BY SMALL WORKERS

Many miners and prospectors throughout the State produced small quantities of concentrates by reason of either small-scale or part-time working. The list hereunder gives the number of men engaged (either full or part time) at each place, the quantities of tin in concentrates sold, and the values.

Name	Locality and Description	Men	Tons	Value £
BRANXHOLM				
Burr, D.	Legerwood	.....	0.022	26
Holmes, J.	Ruby Flat	.....	0.056	63
Miller, G.	Scottsdale	.....	0.027	33
Stevens, W. G.	Ruby Flat	.....	0.020	22
Symons, M.	Branxholm	1	0.294	343
DERBY				
Cotton, G. A.	Derby	.....	0.021	26
Doyle, J. A.	Derby	.....	0.010	11
Gibbons, C.	Derby	1	0.515	613
Kerrison, R.	Derby	1	0.625	751
Machen, A. G.	Derby	1	1.194	1,385
Melville, J.	Derby	.....	0.130	151
Merritt, T.	Derby	1	0.552	654
Ponting, H. C.	Winnaleah	.....	0.016	18
Rainbow, R. L.	Banca Mine, Winnaleah	2	3.263	3,813
Rainbow, W. D.	Banca Mine, Winnaleah	.....	0.028	31
Richardson, P. A.	Derby	1	0.455	535
Singline, K. H.	Ringarooma	.....	0.026	32
Smith, F. G.	Ringarooma	1	0.227	253
Wolfe, R. J.	Derby	.....	0.057	65
GLADSTONE				
Bartels, J.	Gladstone	1	0.296	331
Dunstan, M. J.	Eastern Tin Leases	2	0.951	1,115
Fenton, H. A.	Gladstone	1	0.247	276
Fletcher, S.	Edina Mine	1	0.230	264
Floyd, A. G.	Gladstone	1	0.191	213
Groves, B. G. R.	Gladstone	1	0.114	127
King, E. K.	Amber Creek	1	1.365	1,557
Kirton, K. S.	Gladstone	.....	0.017	21
Lawry R. and Richard- son, D.	Gladstone	1	0.308	368
Lawry, R. C.	Gladstone	.....	0.034	38
Moore, B. S.	Gladstone	.....	0.032	38

PRODUCTION BY SMALL WORKERS—Continued.

Name	Locality and Description	Men	Tons	Value £
Ponting, J.	Gladstone		0.014	17
Richardson, A.	Gladstone		0.038	42
Richardson, F. D.	Gladstone		0.081	91
Richardson, K.	Gladstone		0.025	29
Standage, H.	Amber Creek		0.021	26
MISCELLANEOUS				
Aylett, C.			0.033	39
Banks, K.			0.009	10
Coombe, F.			0.063	78
Dicker, D.			0.044	49
Hayes, E. J.	Kaolin Mine, Upper Natone		0.062	74
King, C. D.	Melaleuca Inlet	1	1.081	1,262
Marshall, W. F.			0.036	44
Maynard, L. V.	Cape Barron Island		0.012	13
O'Keefe and Sulzberger	Trial Flats, Natone		0.014	16
Sajben, J.	Storey's Creek		0.040	44
Sajben, J. and Hayes D.	Storey's Creek	2	0.620	707
MOORINA-WELDBOROUGH				
Boon, W. L.	Frome River	1	0.753	849
Lambert, Jack	Weldborough		0.030	34
Lambert, M.	Weldborough	1	0.583	664
Mullins, F. J.	Moorina		0.181	201
Mullins, H. J.	Moorina		0.115	130
Mullins, T.	Moorina		0.017	19
Richards, A.	Weldborough		0.027	30
Weldborough Tin Mines	W.X.X. Mine, Moorina (closed down)	2	3.074	3,589
MT. CAMERON-PIONEER				
Cox, G.	White Rocks	1	1.117	1,359
Cunningham, D.	South Mt. Cameron		0.039	43
Kerrison, B.	Pioneer		0.396	489
Kerrison, E.	Pioneer		0.188	222
Kerrison, J. and M. J.	Pioneer	2	1.487	1,662
Summers, H. L.	South Mt. Cameron	1	0.128	146
ST. HELENS				
Bailey, F. V.	St. Helens		0.074	83
Beven, M. G.	St. Helens		0.117	142
Counsel, A. B.	St. Helens		0.389	433
Goshen Tin Mines	Groom River (closed down)	4	2.450	2,836
Moses, H.	Constable Creek	1	0.601	711
Newett, A.	Blue Tier	1	0.315	376
Pursell, R. G.	Blue Tier	1	0.709	851
Reynolds, J. P.	St. Helens		0.055	68
Wingfield, J. K.	St. Helens		0.035	43
WARATAH				
Brooke, H. T. and Kelly E.	Mt. Bischoff	2	0.687	835
Delphin, G.	Waratah Creek		0.041	46
Glozier, M. C.	Thompson's Lode (Dumps)		0.036	40
Glozier, T.	Waratah Creek	1	0.119	144
Harrington Bros.	Waratah Creek	1	0.068	80
Housego, B. and C.	Kaysor Lode, North Valley	2	0.264	296
Housego, J.	Waratah Creek (Tailings)	1	0.922	1,060
Kelly, G. and Party	Thompson's Lode	3	0.459	518
Kenworthy, D.	Pig Flat Dyke	1	0.341	397
Machen, G.	Don Hill	2	3.356	3,885
Neighbour, C.	North Valley (battery site)	2	1.031	1,149
Prouse, J.	Pig Flat Dyke	1	0.652	763
Wills, L. W. and G. H.	Black Tank	1	0.167	189
WEST COAST				
Coleman, E.	South Heemskirk	1	0.108	122
Cook, C. S.	Tasman River		0.207	244
Cornish, K.	Montagu Creek		0.017	19
Dunkley, D. and Fieldhouse, R.	Stormsdown Mine	2	0.895	1,025
Hodge, W. and Bye, C. C.	Razorback Mine	2	1.943	2,169
Laffer, R.	St. Dizier	1	0.706	859
Smith, A. S.	Tasman River		0.181	205
Towndrow, P.	Exe River Mine	1	0.096	115

TUNGSTEN (SCHEELITE)

Quantity produced—	Tons (Concentrates)	Value £
1917-58	15,310	16,544,276
1959	Nil	Nil
1960	420	265,382
1961	1,022	505,758
1962	984	328,734
Total	17,736	£17,644,150

**KING ISLAND SCHEELITE (1947) LTD.,
GRASSY**

Mr. L. F. Egan, Mining Engineer, Burnie, reports that the average price of £628.3 per ton WO₃ for the March quarter of the year declined to £539 for the second quarter down to £380 in the third. The figure of £400 in the final quarter was an assumed figure and not entirely realistic as it was not possible to negotiate sales at this level. Overall, 198,768 tons of ore were treated for the recovery of 984 tons of scheelite containing 683 tons of WO₃. The value ascribed to this production was £328,734 but this includes the valuation of the unsold production of the final quarter. Employment during the year declined from 141 to 116 persons.

TUNGSTEN (WOLFRAM)

Quantity produced—	Tons (Concentrates)	Value £
1899-1958	10,446	6,800,888
1959	891	426,179
1960	1,106	731,653
1961	812	416,184
1962	929	400,192
Total	14,184	£8,775,096

ABERFOYLE TIN N.L., ROSSARDEN

Wolfram concentrates produced contained 245 tons of WO₃ valued at £143,690. This company is reviewed under Tin.

**STOREYS CREEK TIN MINING CO. N.L.,
STOREYS CREEK**

Tonnage to the mill was 27,214 tons, a very substantial drop on the quantity for the previous year. This was brought about by reducing numbers employed following a further sharp drop in the price of wolfram. Due to the continued low price of wolfram an effort has been made to step-up production of tin from veins on the upper levels of the mine. A portion only of the wolfram production for the year has been sold.

Production was:—

	Concentrate	Metal
Wolfram, tons	585	423
Tin, tons	72	52

Underground development comprised:—

Driving	2,881 feet
Crosscutting	480 feet
Rising	782 feet

Total 4,143 feet

Diamond drilling comprised 11 holes of total footage 1897. Average employment was 30 men on the surface and 43 underground.

ZINC

Quantity produced—	Tons	Value £
1919-58	553,710	28,796,214
1959	27,928	2,980,598
1960	27,191	3,054,714
1961	31,794	3,237,863
1962	38,168	3,816,812
Total	678,791	£41,886,201

**ELECTROLYTIC ZINC COMPANY OF
AUSTRALASIA LIMITED****RETURN FOR 1962****EXTRACTION FROM CONCENTRATES: RISDON****From other than Tasmanian Ores—**

Zinc	93,009	tons
Cadmium	204	tons
Cobalt Oxide	20	tons
Superphosphate	87,863	tons

From Tasmanian Ore—

Zinc	39,869	tons
Cadmium	122	tons
Cobalt Oxide	1.48	tons

Manufactured product—

Ammonium Sulphate	39,390	tons
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Men employed—

The average number of men employed: 2776.

WEST COAST DIVISION**Ore Mined—**

	Tons
From Hercules Mine	30,705
From Rosebery Mine	263,675
Total	294,380

Concentrates Produced—

	Tons
Zinc Concentrates	80,651
Lead Concentrates	12,817
Copper Concentrates	11,192
Total	104,660

Recoverable Quantity in Ore Mined—

Zinc	38,168	tons
Lead	10,988	tons
Copper	1,014	tons
Cadmium	73	tons
Silver	1,285,875	oz.
Gold	20,977	oz. (fine)
Cobalt Oxide	1.48	tons
Manganese Dioxide	276	tons
Zinc Sulphate	268	tons
Sulphur as Sulphuric Acid	43,798	mono-tons

Total Value of Production—£5,919,314

Average Number of Men Employed—

Hercules Mine	40
Rosebery Mine	681
Total	721

ROSEBERY AND HERCULES MINES

Development at the Rosebery mine consisted of 1204 feet of driving and cross-cutting, 100 feet of winzing and 1878 feet of rising on levels Nos. 11 to 14. A very large pump station was partly constructed on 14 level and a winze sunk preparatory to raising the main shaft.

On the surface a new water supply pump station was installed on the Stitt River upstream. The 6 ft. Hardinge ball mill was replaced by an 8 ft. x 4 ft. in the mill and a 2-column ion-exchange water treatment plant installed to condition the boiler-feed water. The steam raised is used to heat the mill circuit water. Extensive electrical installations supplying power at 6.6 KV to the mine and mill were made to improve the supply.

At the Hercules Mine development consisted of 87 feet of headings.

Diamond drilling comprised 11,012 feet at Rosebery, 1715 at Hercules and 3604 on prospects.

RISDON WORKS

The average number of men employed was 2776 and the total value of the products was £14,950,707 both showing a slight drop on the figures for 1961. New plant brought into operation during the year included hydrocyclones in the Leaching Division, five retorts for the manufacture of superfine zinc dust, and the No. 2 spent solution cooling tower in the Electrolytic Division. Another change was the production of A2 special zinc in 1760-lb. blocks in addition to the normal sized ingots.

ZINC SULPHATE

This is a by-product from the treatment of zinc concentrates by the Electrolytic Zinc Company of Australasia Limited. The quantity produced was 268 tons and value £12,089.

2.—NON-METALLIC MINERALS

CLAY

Quantity Produced—	Cubic Yards	Value, £
1958	121,531	74,176
1959	125,495	100,620
1960	116,038	113,607
1961	115,860	112,372
1962	113,669	121,786
Total	592,593	£522,561

DOLOMITE

Quantity produced—	Tons	Value £
Prior to 1959	13,239	39,480
1959	2,907	8,119
1960	2,678	6,947
1961	1,108	3,155
1962	2,217	6,734
Total	22,149	£64,435

Company	Clay, cu. yd.	Value £	No. of Men	Product
Agrippe Pottery Pty. Ltd., Relbia	624	266	5	Pipes
Burnie Brick Co., Cooe	7,600	3,245	13	Bricks
John Campbell Pty. Ltd., Launceston	460	204	13	Pipes
Clays Pty Ltd., and McHugh Bros. Pty. Ltd., Launceston	5,204	5,204	20	Pipes
Crisp & Gunn Co-op. Ltd., West Hobart	16,141	20,176	46	Bricks
Goliath P. C. Co. Ltd., Railton	10,540	18,006	3	Cement
Granton Brick Ltd., Granton	11,260	14,165	27	Bricks
Hobart Brick Co., New Town	10,279	11,987	34	Bricks
Huttons Bricks Pty. Ltd., Prospect	11,435	6,099	19	Bricks
King's Bay Contractors Kingston	4,616	6,924	2	Bricks
Luck Brick & Pipe Pty. Ltd., Dulverton	6,860	6,860	19	Bricks
Machens Bricks, Kings Meadows	16,940	16,940	24	Bricks
McHugh Bros. Bricks Pty. Ltd., Launceston	8,560	8,560	8	Bricks
Wunderlich Pty. Ltd., Loira & Launceston	3,150	3,150	24	Tiles

CIRCULAR HEAD DOLOMITE AND TRADING CO. PTY. LTD., SMITHTON

This Company, the sole producer, employed an average of two men and increased production by 100 per cent.

KAOLIN

Quantity produced—	Tons	Value £
1940 to 1958	107,089	421,049
1959	1,195	5,733
1960	964	5,062
1961	1,232	6,383
1962	606	3,282
Total	111,086	£441,509

ENDURANCE TIN MINING CO. N.L., SOUTH MOUNT CAMERON

This Company, reviewed under Tin, produced 606 tons of kaolin, valued at £3282 from deposits on its leases. The seam of clay was worked out and production has ceased.

LIMESTONE

QUANTITY AND VALUE OF PRODUCTION AND USAGE

Years	Manufacture of Cement		Manufacture of Carbide		Chemical and Metallurgical		Agriculture and Other		Totals	
	Tons	£	Tons	£	Tons	£	Tons	£	Tons	£
1919-58	3,188,783	1,745,807	503,532	582,599	3,953,920	2,083,869	448,992	505,127	8,095,227	4,917,402
1959 ..	170,930	136,872	22,074	41,881	24,121	39,556	13,095	22,551	230,220	240,860
1960 ..	152,720	116,518	24,291	42,891	24,896	47,675	13,301	22,784	215,208	229,868
1961 ..	132,580	121,288	26,632	45,501	24,816	46,663	19,314	23,308	203,342	236,760
1962 ..	233,142	228,286	28,374	46,743	35,695	64,933	21,327	30,931	318,538	370,893
Totals	3,878,155	2,348,771	604,903	759,615	4,063,448	2,282,696	516,029	604,701	9,062,535	5,995,783

THE AUSTRALIAN COMMONWEALTH
CARBIDE COMPANY, IDA BAY AND
ELECTRONA

This company produced 13,989 tons of Calcium Carbide and employed an average of 167 persons at the works. Production was 860 tons higher than last year when an average of 160 persons were employed. In addition 195 tons of Acetylene Black was produced, eight men being employed on this.

From the Ida Bay quarry 28,374 tons of limestone valued at £46,743 were shipped to the works at Electrona, the average number of employees being 27.

GOLIATH PORTLAND CEMENT CO. LTD.,
RAILTON

In the manufacture of 167,641 tons of cement 233,142 tons of limestone valued at £228,286 were quarried and processed. It is interesting to note that an additional quantity of 100,562 tons of limestone was quarried without an increase in manpower, the average employment dropping from 20 to 19 men in the quarry.

Factors contributing to this increased output were:—

1. Development of markets for special sulphate-resistant cement.
2. The shipment of 51,276 tons of clinker cement to the mainland. In this regard ship loading rates of up to 400 tons per hour were obtained.

A development of interest was the completion of the new technical block.

WRIGHT STEPHENSON PTY. LTD.,
PULBEENA

No major developments or innovations occurred during the year although increasing demand for limesands for use in agriculture resulted in the production and marketing of 7176 tons valued at £8971 as against 4526 tons valued at £5658 in the previous year. Again, two men only were employed.

MELROSE AGRICULTURAL LIME
QUARRIES, EUGENANA

Production of ground limestone was increased to 4216 tons valued at £8432, an average of 10 men being employed,

RAILTON LIMEWORKS, RAILTON

This company quarried and milled 8325 tons of limestone valued at £6410, an average of eight men being employed. Burnt limestone production was nil.

MINERAL SUPPLIES, ULVERSTONE

Sales of stocks on hand by this company amounted to 12 tons valued at £67.

ASSOCIATED FOREST HOLDINGS PTY.
LTD., LOONGANA

This company opened a quarry in the large Loongana limestone deposits but found that the grade was not economic. The quantity mined was 6048 tons valued at £12,096. The stone was burnt at Burnie for use as a chemical reagent in paper manufacture.

A. R. BEAMS, FLOWERY GULLY

From his Quarry, Crushing Plant and Lime Kiln, Mr. Beams produced:—

	£
488 tons Agricultural Limestone, valued at	1,006
4505 tons Limestone for Chemical and Metallurgical purposes, valued at	5,259
450 tons Burnt Lime for various purposes, valued at	4,725
<u>5443 tons Total Value</u>	<u>£10,990</u>

Seven men were employed.

R. K. SULZBERGER, LAUNCESTON AND
FLOWERY GULLY

From his quarry at Flowery Gully and crushing plant at Launceston, Mr. Sulzberger produced:—

	£
660 tons Agricultural Limestone, valued at	1,320
9753 tons Limestone for Chemical and Metallurgical purposes, valued at	19,506
<u>10,413 tons Total Value</u>	<u>£20,826</u>

Seven men were employed,

AUSTRALIAN NEWSPRINT MILLS, LTD., JUNEE

This company quarried 5203 tons of limestone valued at £10,706 at Junee to be burnt at Boyer for use as a chemical reagent. The average number of men employed was six.

THE MOUNT LYELL MINING AND RAIL- WAY CO. LTD.—HALLS CREEK

This company, reviewed under Copper, mined 10,186 tons of limestone for metallurgical purposes.

OCHRE

Quantity produced—

	Tons	Value £
1918 to 1958	2,009	5,250
1959	59	436
1960	31	219
1961	75	509
1962	60	390
Total	2,234	£6,804

A. PEARSON, SPALFORD

Production of ochre from this pit was 60 tons valued at £390. This includes four tons of yellow ochre from Iron Cliffs.

PEBBLES

A. PEARSON, ULVERSTONE

The collection of pebbles for grinding was continued on the beaches around Ulverstone. The output was 375 tons, valued at £2561.

SILICA

Quantity produced—

	Tons	Value £
1936-58	149,472	91,883
1959	6,519	7,657
1960	5,231	6,885
1961	1,415	2,042
1962	514	3,054
Total	163,151	111,521

CULLEN AND KENNY, FORTH

The Forth silica deposit was worked to supply a lot of 500 tons valued at £2876 to a ferro-manganese smelter for use as a flux.

MINERAL SUPPLIES, ULVERSTONE

This firm supplied 14 tons of silica valued at £178 for use by foundries as a flux.

3.—CONSTRUCTION MATERIALS

BUILDING STONE

Quantities produced—

	Cubic Yards	Value £
Freestone	677	4,060
Granite .....	.....	.....
Other	653	1,073
Total	1,330	£5,133

Freestone was quarried and dressed in two quarries near Hobart for walls, fireplaces and paving. A quartz schist was put to similar usage at Burnie. There was renewed interest in the granite at Coles Bay and it is expected that operations will be resumed to market that beautiful stone.

CRUSHED AND BROKEN STONE

The largest producers were Government and semi- and Local Government authorities, accounting for 191,279 cubic yards of crushed and broken stone valued at £290,791. Dolerite, being both suitable and widespread, was quarried most extensively for road and concrete making.

BASALT

Quarry	Men	Cu.yds.	Value £
A.F.H., Surrey Hills	1	2,000	2,000
A.N.M., Maydena	1	1,755	1,580
Bonney's, Mooreville	1	2,670	1,465
Georgetown Council	1	2,000	1,500
Haines's, Duff River	2	4,200	4,200
Weily's, Bridgewater	11	20,768	18,588
Wynyard Council	4	3,074	5,379
Sundry .....	.....	200	170
Total	21	36,667	£34,882

DOLERITE

Quarry	Men	Cu.yds.	Value £
Bain's, Dynnyrne	9	16,469	16,769
Bothwell Council	3	6,000	6,000
Flagstaff Gully	4	14,184	9,862
Gordon's, Glenorchy	5	16,200	15,500
Grubb's, Moonah	9	23,500	27,058
Hobart, New Town	30	135,345	141,759
Launceston, Mowbray	21	50,138	58,970
McHugh's, Waverley	7	6,404	8,645
Rouse's, St. Leonards	6	10,162	12,882
Others	166	255,603	357,168
Total	260	534,005	£654,613

LIMESTONE

Quarry	Men	Cu.yds.	Value £
A.F.H., Loongana	1	3,516	3,516
Melrose, Eugenana	2	2,147	2,636
Weily's, Glenorchy	14	21,360	26,700
Sundry	1	151	906
Total	18	27,174	£33,758

OTHER STONES

Quarry	Men	Cu.yds.	Value £
Australian Newsprint, Maydena	1	2,324	3,749
Devon Metal Supplies, Devonport	2	4,062	6,529
Devon Metal Supplies, Round Hill	5	8,616	6,689
Devonport Council	1	6,239	2,950
Electrolytic Zinc, Rosebery	2	1,760	3,520
A. E. Hilder, Loyatea	1	1,000	50
R. Jones, Round Hill	6	10,648	9,926
Mt. Lyell, West Lyell	4	21,494	42,989
A. R. Stone, Wivenhoe	1	2,870	2,485
Woodfield and French, Launceston		8,312	8,158
Others	2	4,537	2,563
Total	25	71,862	£89,608

GRAVEL AND SAND

Quantities produced—		
	Cubic Yards	Value £
Gravel	1,087,364	574,300
Sand	90,959	66,605
Other road materials	537	268

Clean sand and gravel are obtained from many small pits, principally in the South Arm, Flowerdale and Beaconsfield districts. From the last named 23,694 cubic yards were obtained on royalty payments. Prepared Concrete Limited of Launceston obtained 47,249 cubic yards valued at £47,296.

The largest producers were governmental authorities, whose output was 905,064 cubic yards valued at £474,178.

4.—FUEL MATERIALS**COAL**

Quantity produced—	Tons.	Value £
Prior to 1958	7,464,778	7,893,216
1958	276,268	550,859
1959	299,368	621,494
1960	297,670	673,543
1961	255,828	611,140
1962	272,342	647,574
Total	8,866,254	£10,997,826

Mr. D. Besford, Inspector of Mines reports a rise in production of 6% or 16,514 tons. The number of employees decreased from 258 to 227, of whom 145 were underground. The production per man-year increased from 1505 tons to 1878 tons for underground employees and from 992 to 1200 overall.

CORNWALL COLLIERY, ST. MARYS

This colliery produced 105,268 tons and employed an average of 105 persons, a production well below the record year of 1960.

DUNCAN COLLIERY, FINGAL

The Cornwall Coal Company produced 69,849 tons from this mine and employed an average of 45 persons. This was 11,936 tons less than last year.

Washed coal sold from this and the Cornwall Colliery amounted to 151,286 tons valued at £421,413.

FINGAL COLLIERY, FINGAL

This mine operated by the Fingal Coal Co. Pty. Ltd. produced 22,142 tons valued at £50,261 and an average of 17 men were employed.

TASMANIAN COLLIERY

This mine was operated by the Fingal Coal Co. Pty. Ltd. for the production of 5691 tons valued at £12,889. The number of men employed was four.

VALLEY COLLIERY, FINGAL

From this mine, formerly known as Barber's Colliery, the Valley Coal Co. Pty. Ltd. produced 11,277 tons of coal valued at £22,554. These workings were closed down at the end of the year on the driving of new main headings further east.

SEYMOUR COLLIERY, SEYMOUR

Messrs. Yates and Haas produced 3790 tons valued at £8418 and employed three persons. This was less production than was obtained last year, by 179 tons.

NEW STANHOPE COLLIERY, AVOCA

The Stanhope Coal Company produced 15,272 tons valued at £38,180 and employed an average of 11 persons.

MOUNT CHRISTIE COLLIERY, AVOCA

Mr. R. C. Fenton produced 1763 tons valued at £3711 and employed two men.

MERRYWOOD COLLIERY, AVOCA

Production from this colliery was 33,014 tons valued at £75,202 and an average of 19 persons were employed. The mine was closed down at the end of the year owing to loss of markets.

LANGLOH COLLIERY, HAMILTON

The Hamilton Coal Company produced 2627 tons valued at £9618 and employed an average of nine persons. This was 590 tons less than last year with one less person.

SANDFLY COLLIERY, KAOOTA

Mr. O. L. Roberts produced 1649 tons valued at £5328 and employed three persons.

5.—FOREIGN ORES

The total value of the metallurgical products of four large works treating foreign ores imported into Tasmania was approximately £17,431,610.

ALUMINIUM

The Aluminium Production Corporation Ltd., owner of the Bell Bay Works for the extraction of alumina and aluminium from imported bauxite, changed its name to Comalco Aluminium (Bell Bay) Ltd. Local products such as coal and limestone were consumed in the process. Construction of furnaces and ancillary works was continued and it is expected that the planned production of 52,000 tons per year will be reached in 1963.

FERRO ALLOYS

The Tasmanian Electro Metallurgical Company Pty. Ltd. completed construction of its plant at Bell Bay and production of high carbon ferromanganese commenced early in the year from imported manganese ore. Ore from several sources was used and limestone and coke were imported also. A small parcel of local silica was purchased for use as a flux.

ZINC, CADMIUM, COBALT OXIDE AND SUPERPHOSPHATE

The Electrolytic Zinc Co. of Australasia Ltd., Risdon, described under Zinc, produced zinc from Broken Hill concentrates together with small quantities of cadmium and cobalt oxide as by-products. The sulphuric acid derived from roasting the concentrates, was used in making superphosphate fertilizers from phosphate rock imported from Nauru, Ocean and Christmas Islands.

TITANIUM DIOXIDE

Australian Titan Products Pty. Ltd. at Heybridge produced 12,598 tons of titanium dioxide from 24,641 tons of Western Australian ilmenite concentrates, an average of 439 people being employed. The output was 995 tons greater than in 1961.

The new process building was commissioned in October. A further stage of expansion was reached with the production in December of titanium dioxide in the anatase phase, as well as in the customary rutile form.

REVENUE

Return showing the Revenue Collected during the Year ending 31st December, 1962.

Head of Revenue	Amount £
Public Works and Services—Mines Department	7,746
Rent and Fees of Auriferous and Mineral Lands	22,004
Survey Fees	569
Fees under the Explosives and Inflammable Liquids Act	13,802
Total	<u>£44,121</u>

Comparative Statement of Revenue from Mines, being Rents, Fees, Storage of Explosives, &c., Paid to the Treasury during the Years 1955 to 1962.

Year	Amount £
1955	22,858
1956	24,260
1957	23,827
1958	22,187
1959	32,288
1960	41,726
1961	47,598
1962	44,121

The above Statement does not include Stamp Duties upon Transfer of Leases.

LEASES AND LICENCES*Return showing the Total Number of Leases and Licences in Force on 31st December, 1962.*

Leases and Licences	Number	Number of Sluiceways	Area (Acres)
Bauxite	5	.....	454
Clay	16	.....	438
Coal	34	.....	8,740
Copper	2	.....	160
Copper-Nickel	3	.....	120
Dolomite	4	.....	309
Easement Licences	62	.....	945
Feldspar	2	.....	15
Granite	3	.....	25
Gold	26	.....	656
Iron Ore	4	.....	149
Limestone	23	.....	1,628
Minerals	38	.....	8,390
Mica	1	.....	20
Osmiridium	2	.....	50
Ochre	3	.....	28
Scheelite	5	.....	1,000
Silica	3	.....	21
Silver-Lead	16	.....	4,399
Stone	29	.....	3,397
Sand and Gravel	8	.....	722
Tin	184	.....	9,267
Tin-Wolfram	4	.....	74
Uranium	1	.....	50
Wolfram	5	.....	2,249
Water Licences	116	744	939
Total	601	744	44,245

Return showing Number and Area of New Leases and Licences Issued during the year ended 31st December, 1962.

Leases and Licences	Number	Area (Acres)	Sluiceways of Water
Bauxite	.....	.....	.....
Clay and sand	.....	.....	.....
Coal	8	950	.....
Copper	1	80	.....
Gold and Copper	6	310	.....
Limestone	4	123	.....
Minerals	7	427	.....
Osmiridium and chrome	2	50	.....
Scheelite	1	684	.....
Silver-Lead	1	10	.....
Stone	8	192	.....
Tin	25	2,666	.....
Tin-Wolfram	1	1277	.....
Wolfram	.....	.....	.....
Water licences	13	32	68
Total	75	6,751	68

Return showing Number and Area of Leases and Licences Applied for during the Year ended 31st December, 1962.

Leases and Licences	Number	Area (Acres)	Sluiceways
Coal	1	40	.....
Gold	4	100	.....
Gold-Copper	.....	.....	.....
Stone	10	429	.....
Tin	33	3,541	.....
Tin-Wolfram	1	20	.....
Minerals	1	40	.....
Water Licences	9	26	59
Total	59	4,196	59

Return Showing Particulars of Exploration Licences and Special Prospector's Licences in Force at 31st December, 1962.

Licence No.	Holder	Area	Situation	Mineral
E.L.3/59	Mt. Lyell Mining and Railway Co. Ltd.	12 square miles	West Coast	Minerals except coal and oil
E.L.4/59	Rio Tinto Southern Pty. Ltd.	91 square miles	West Coast	Minerals except coal and oil
E.L.1/60	Haematite Explorations Pty. Ltd.	28,975 square miles	Bass Strait	Oil and gas
E.L.3/61	H. K. Turner	26 square miles	Gladstone	Minerals except coal and oil
E.L.4/61	E. R. Hudson	147 square miles	Savage River	Minerals
E.L.5/61	Industrial and Mining Investigations	450 square miles	East Coast	Coal and limestone
E.L.1/62	Electrolytic Zinc Co.	49 square miles	Rosebery	Minerals
E.L.2/62	Electrolytic Zinc Co.	8 square miles	Dundas	Minerals
E.L.5/62	Tasmania and Bass Strait Oil N.L.	8,588 square miles	Northern & Central Tas.	Oil
E.L.7/62	Aberfoyle Tin N.L.	35 square miles	Blue Tier	Minerals
S.P.L. 378	K. S. Cordwell	960 acres	Moina	Minerals
S.P.L. 379	C. Loftus-Hills	640 acres	Zeehan	Minerals
S.P.L. 383	G. C. Kingston	25 square miles	Balfour	Minerals
S.P.L. 384	E. J. Bayley	25 square miles	Balfour	Minerals
S.P.L. 386	L. J. Singleton	5 square miles	Dial Range	Minerals

Return showing the Total Number and Areas of Authorities to Prospect held during the year ended 31st December, 1962.

Type of Authority	Number	Area
Permits to enter on private land including owners' consents	10	7,721 acres
Exploration licences	10	38,388 sq. miles
Special prospectors' licences	6	37,300 acres
Prospectors' licences	101	5,050 acres
Miners' rights	86	43 acres

MINERAL PRICES

Table showing the Average Australian Annual Prices for Minerals During Recent Years.

Mineral	1959			1960			1961			1962		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Copper per ton	314	10	0	323	6	8	306	13	4	305	0	0
Lead per ton	100	0	0	100	0	0	99	3	4	81	13	4
Zinc per ton	106	6	5	112	8	6	101	19	1	100	0	0
Tin per ton	1,058	1	5	1,039	13	4	1,177	13	4	1,160	13	4
Silver per oz.	0	8	3	0	8	6	0	8	7	0	9	8
Osmiridium per oz.	20	0	0	20	0	0						
Gold per fine oz.	15	12	6	15	12	6	15	12	6	15	12	6
Wolfram per unit (WO ₃)	128/2			182/5			143/2			97/5		
Scheelite per unit (WO ₃)	128/2			182/2			143/2			97/5		

RETURN SHOWING VALUE OF TASMANIAN MINERALS IN RECENT YEARS WITH AUSTRALIAN METAL PRICES

	Value £A		Value £A
1955	11,069,444	1959	12,766,261
1956	14,374,621	1960	13,387,260
1957	12,591,687	1961	13,379,477
1958	11,838,054	1962	15,437,068

MINERAL PRODUCTION SINCE 1880

Quantity and Value of Mineral Production as at 31st December, 1962

<i>Mineral</i>	<i>Total Quantity</i>	<i>Value £A</i>
METALLIC MINERALS—		
Antimony	(tons) 3	1,017
Bismuth	(tons) 84	29,644
Cadmium	(tons) 1,306	1,449,405
Cobalt Oxide	(tons) 13	10,762
Copper (Blister) to 1918 (now shown under Silver and Copper)	(tons) 166,600	13,788,527
Copper Matte	(tons) 6,277	133,736
Copper Ore to 1918—(now shown under Copper)	(tons) 41,769	577,873
Copper from 1919	(tons) 405,458	61,437,238
Crocoite	(specimens only)	533
Gold	(fine oz.) 2,568,505	14,786,979
Ilmenite	(tons) 550	1,256
Iron Oxide (including Hematite, Limonite and Magnetite)	(tons) 96,938	99,964
Lead (from 1919)	(tons) 329,489	19,006,579
Manganese	(tons) 1	3
Manganese Dioxide (from 1957)	(tons) 1,034	11,958
Monazite	(tons) 33	607
Nickel	(tons) 233	40,518
Osmiridium	(oz.) 31,088	708,531
Pyrites	(tons) 1,455,169	3,101,808
Rutile	(tons) 1	18
Scheelite	(tons) 17,736	17,644,150
Silver Lead Ore to 1918 (now under Silver and Lead)	(tons) 1,083,898	6,429,219
Silver from 1919	(fine oz.) 41,457,299	10,217,494
Sulphur as Sulphuric Acid (from 1957) (mono tons)	174,068	803,048
Tin	(tons) 146,995	34,698,067
Wolfram	(tons) 14,184	8,775,096
Zinc	(tons) 678,791	41,886,201
Zinc Sulphate (from 1957)	(tons) 1,110	43,583
NON-METALLIC MINERALS—		
Asbestos	(tons) 3,980	17,142
Barytes	(tons) 2,205	8,239
Clay—(from 1958)		
Brick	(cubic yd.) 499,756	458,584
Tile	(cubic yd.) 21,126	5,198
Other	(cubic yd.) 71,711	58,779
Dolomite	(tons) 22,149	64,435
Graphite	(tons) 40	107
Kaolin	(tons) 111,086	441,509
Limestone—		
Agricultural and other	(tons) 516,029	604,701
Chemical and Metallurgical	(tons) 4,063,448	2,282,696
Carbide	(tons) 604,903	759,615
Cement	(tons) 3,878,155	2,348,771
Ochre	(tons) 2,234	6,804
Pebbles (from 1957)	(tons) 3,330	24,714
Silica	(tons) 163,151	111,521
Talc	(tons) 333	1,077
FUEL MINERALS—		
Coal	(tons) 8,866,254	10,997,826
Shale	(tons) 41,572	31,231
CONSTRUCTION MATERIALS—		
Building Stones—		
Granite	(cubic yd.) 2,004	33,514
Freestone	(cubic yd.) 1,334	8,263
Other	(cubic yd.) 708	1,089
Gravel (from 1958)	(cubic yd.) 4,144,136	1,959,060
Sand (from 1958)	(cubic yd.) 172,372	136,379
Crushed and Broken Stone—(from 1958)		
Basalt	(cubic yd.) 160,750	126,122
Dolerite	(cubic yd.) 2,124,839	3,394,706
Limestone	(cubic yd.) 134,038	163,423
Sandstone	(cubic yd.) 4,766	1,671
Other	(cubic yd.) 479,522	375,083
Other Road Materials	(cubic yd.) 28,595	20,224
		£260,131,297

**STATISTICS RELATING TO THE MINERAL INDUSTRY FOR THE YEAR
ENDED 31st DECEMBER, 1962.**

Mineral	Total Quantity	Value £A.
<i>Metallic Minerals:</i>		
Cadmium .. (tons)	72	128,173
Cobalt Oxide .. (tons)	1.48	1,652
Copper .. (tons)	13,949	4,254,592
Gold .. (fine oz.)	28,673	448,017
Iron Oxide .. (tons)	4,082	5,870
Lead .. (tons)	11,605	947,714
Manganese Dioxide .. (tons)	276	4,708
Pyrites .. (tons)	54,629	163,887
Scheelite .. (tons)	984	328,734
Silver .. (fine oz.)	1,441,447	696,855
Sulphur as Sulphuric Acid .. (mono ton)	43,798	208,596
* Tin .. (tons)	1,211	1,403,736
* Wolfram .. (tons)	929	400,192
Zinc .. (tons)	38,168	3,816,812
Zinc Sulphate .. (tons)	268	12,089
Value of Metallic Minerals ..	....	£12,821,627
<i>Non-Metallic Minerals:</i>		
Clay:		
Brick .. (cubic yds.)	93,691	3,150
Tile .. (cubic yds.)	3,150	94,956
Other .. (cubic yds.)	16,828	23,680
Dolomite .. (tons)	2,217	6,734
Kaolin .. (tons)	606	3,282
Limestone:		
Agricultural .. (tons)	20,875	26,196
Carbide .. (tons)	28,374	46,743
Cement .. (tons)	233,142	228,286
Chemical and Metallurgical .. (tons)	35,695	64,933
Other .. (tons)	452	4,735
Ochre .. (tons)	60	390
Pebbles .. (tons)	375	2,561
Pebbles .. (tons)	514	3,054
Value of Non-Metallic Minerals ..	....	£508,700
<i>Fuel Minerals:</i>		
Coal .. (tons)	272,342	£647,574
<i>Construction Materials:</i>		
Crushed and Broken Stone:		
Basalt .. (cubic yds.)	36,667	34,882
Dolerite .. (cubic yds.)	534,005	654,613
Limestone .. (cubic yds.)	27,174	33,758
Sandstone .. (cubic yds.)	Nil	Nil
Other .. (cubic yds.)	71,862	89,608
Building Stone:		
Freestone .. (cubic yds.)	677	4,060
Granite .. (cubic yds.)	Nil	Nil
Other .. (cubic yds.)	653	1,073
Gravels .. (cubic yds.)	1,087,364	574,300
Sand .. (cubic yds.)	90,959	66,605
Other Road Materials .. (cubic yds.)	537	268
Value of Construction Materials ..	....	£1,459,167
Total Value with Australian Metal Prices ..	....	£15,437,068
<i>Metallurgical Production from other than Tasmanian Ores:</i>		
Alumina ..	}	17,431,610
Aluminium ..		
Cadmium ..		
Cobalt Oxide ..		
Ferro-Manganese ..		
Titanium Dioxide ..		
Zinc ..		
Total Value of Mining and Metallurgical Production ..	....	£32,868,678

Manufactured Products:
Product—

Product—	Total Quantity (tons)
Acetylene Black ..	195
Ammonium Sulphate ..	39,390
Carbide ..	13,989
Cement ..	167,641
Superphosphate ..	87,863

Average number of men employed—8708.

* Includes adjustment.

DEPARTMENTAL ACTIVITIES

AID TO MINING

Expenditure for the various purposes of the Aid to Mining Act 1929, amounted to £11,804 being an increase of almost £6,000 over the previous year. Revenue also increased by £4730.

The principal item of expenditure related to financial assistance for productive mining operations. Seven applications were approved, four being for the purchase of mining plant, one to provide a water supply for alluvial tin mining, one for sinking and driving on a tin lode, and one to assist mining operations which had been seriously curtailed because of a fall of earth. The advances related to tin mining areas at Gladstone, Blue Tier, St. Helens, South Mt. Cameron, Gipps Creek, Boobyalla and Waratah. Interest in tin mining continued to be stimulated by the increased price of tin and in three cases the assisted party was provided with plant to enable productive mining to be established. Repayments of advances are made by a royalty on production and £3956 was received from assisted parties including substantial repayments in respect of the loan made in 1959 and 1960 for the purchase of a coal washing plant.

One of the principal tin producers sustained severe financial loss when the working face collapsed following heavy rains, and after investigating the position a substantial loan was made to enable operations to be continued pending sales of tin. The advance prevented the possible closure of the mine and men becoming unemployed. As a result productive operations have continued and the loan is being repaid.

Apart from advances for developmental work all loans are secured by registered mortgages covering plant installed at the mine, and in all

cases provision is made for repayment by a small royalty on the proceeds from productive mining operations.

Mt. Bischoff Mine, Waratah.—The reserve for tribute purposes continued to be maintained and tribute parties were responsible for a small production of tin. One party was financially assisted in driving and rising and made use of the portable compressor owned by the Department. Further repairs were made to the stationary compressor at the Mine, the concentrating tables in the mill were reconditioned, the mill building was extensively repaired and repairs were made to a dam and wooden fluming supplying water to the mill.

An amendment was made to the Aid to Mining Act 1927, to enable a formal authority to prospect to be issued on the portion of the reserved area at Waratah not required for tribute purposes. Four such authorities have been issued and active investigational work is in progress.

Mining Plant.—The portable compressor was in use at the old Mt. Bischoff Mine, Waratah, and also at Dundas on the West Coast where it was used by a Company to obtain bulk tin samples for testing. The equipment was later transferred to the East Coast to enable bulk samples to be taken of a potential tin producing prospect. There has been little demand for mining plant which is, however, being maintained in good order and condition to meet likely requirements. Most prospectors direct activities to alluvial mining where the plant is not required for prospecting. The value of the equipment has been demonstrated by its previous use by tributors at Waratah, and in enabling exploration companies to take bulk samples of ore for laboratory and pilot plant assessment.

STATEMENT OF RECEIPTS AND PAYMENTS OF THE MINING TRUST FUND FOR THE YEAR ENDED 31ST DECEMBER, 1962.

<i>Receipts.</i>	£	s.	d.	<i>Payments.</i>	£	s.	d.
Balance 31st December, 1961	5,744	10	1	Assistance	9,433	13	6
Appropriation Act 1962-63	4,000	0	0	Maintenance tribute plant Mt. Bischoff			
Repayment of loans	3,956	12	10	Mine, Waratah	1,401	3	11
Interest on loans	760	17	10	Mining plant maintenance	969	9	0
Hire of mining plant	216	18	6		£11,804	6	5
Tribute royalty	161	2	4	Balance to next Account	3,038	15	2
Miscellaneous	3	0	0		£14,843	1	7
	£14,843	1	7				

WARDEN'S COURT

R. G. Fewings, W. R. Morgan and D. B. Lipscombe v. Endurance Tin Mining Co. N.L.—Application for forfeiture of lease 10680/M, 220 acres, Pioneer.

This case was heard by the Warden of Mines at Launceston on 12th December, 1962. The Warden declared the lease forfeited.

EXEMPTIONS

The following exemptions were granted:—

- Eagle Metal and Industrial Products Pty. Ltd.—Leases 45M/52, 46M/52, 47M/52, Zeehan.
- M. D. Garretty—Leases 24M/53 and 25M/53, Stanley River.
- J. Bibby—Leases 26M/60, 27M/60, 77M/56, 79M/55, 34M/39 and licences 15W/55 and 12W/55, Adamsfield.

MINE MANAGERS' CERTIFICATES

During the year the Board of Examiners granted Metalliferous Mine Managers' Certificates of Competency as follows:—

After examination—

Peter Towndrow.

On presentation of a certificate issued by the recognized authority in another State—

Allan Huistean McIntosh.

Stuart Kessen Pennyquick.

On presentation of a diploma issued by a recognized examining body—

Robin Charles Vivian.

STAFF

The following were the staff movements during the year:—

Name & Position	Remarks
Foley, J. V.	—Transferred and promoted.
Vivian, R. C., Inspector of Mines and Explosives	—Appointed.
Powell, H. R., Inspector of Explosives	—Appointed.
Goodrick, J. C., Caretaker Magazine and Inspector of Explosives	—Resigned.
Jobson, G., Caretaker Magazine and Inspector of Explosives	—Appointed.
Noldart, A. J., Senior Geologist	—Appointed.
Rowe, S., Geologist	—Appointed.
Gee, D., Geologist	—Appointed.
Farquhar, P., Chemist	—Resigned.
Anderson, R. G., Cadet Chemist	—Appointed.

SCHOLARSHIPS

A Geology scholarship was awarded to Mr. D. E. Leaman to undertake studies at the University of Tasmania for a science degree with geology as the major subject. The first scholarship was awarded in 1958. Since then two scholarship holders have graduated with honours and have joined the staff as geologists, Mr. Dennis Gee was appointed in January 1962 and Mr. D. Groves in December 1962. The holder of the geology scholarship is commencing his second year course and the holder of the chemistry scholarship is commencing his final year for the Bachelor of Science Degree.

A further geology scholarship will be offered in 1964, and other scholarships will be offered in future years as required to satisfy staff requirements both for geologists and chemists.

PUBLICATIONS

The following publications were issued during the year:—

Geological Map—Zeehan Sheet (No. 50 of Geological Atlas).
 Technical Reports No. 6.
 Explanatory Notes Zeehan Geological Sheet.
 Explanatory Notes Du Cane Geological Sheet.

EXPLOSIVES PUBLICITY CAMPAIGN

An intensive campaign was conducted with the object of educating the public in the dangers associated with the use and handling of explosives including fireworks. Radio and television talks were given and a comprehensive display of various types of explosives and photographs showing the results of explosions was arranged at the offices of the Commonwealth Bank at Hobart, Launceston, Devonport and Burnie. A similar display was made at the Sheffield area school and a lecture and demonstration was given to the Rotary Club at Beaconsfield.

A comprehensive exhibit on the dangers of misuse of explosives and fireworks was prepared and displayed in association with the Department of Health Services at Agricultural Shows at Hobart, Launceston, Burnie, Devonport and Stanley. It is estimated that the exhibit was visited by some 73,000 people.

Warning posters have also been printed and distributed throughout the State.

Lectures were given to the Police Training School and demonstrations conducted on all aspects of safety in the storage, handling, use and destruction of explosives.

The Department is conscious of the dangers associated with the handling of explosives by inexperienced persons, and it is planned to continue displays and other means of educating the public to recognize and respect explosives. The slogan is "Explosives are dangerous—If you do not understand them leave them alone."

Consideration is being given to a more rigid control on the use of explosives outside mines and quarries, which is already controlled under the Mines and Works Regulation Act, and it is possible that amendments will be made to the Explosives Act and Regulations during the coming year to prevent the use of explosives by other than qualified persons.

MINES DRAUGHTING SECTION

Number of working plans in use and kept up-to-date	242
Workings plans renewed and additional plans brought into use	7
Manuscripts brought up-to-date for reproduction	3
Manuscripts traced for reproduction	2
Lithographs printed	180
Lithographs entered to date for sale	75
Miscellaneous plans and tracings prepared	20
Mineral diagrams drawn	31
Mineral leases drawn in duplicate	26
Mineral leases drawn and described subject to survey	62
Mining Charts brought up-to-date for Launceston Office	5
Copies of Reduced Charts prepared for the Launceston Office	10

APPRECIATION OF SERVICES

Appreciation is recorded of the services rendered by officers of the Department, including officers of the Mines Draughting Section, Warden of Mines and Registrar of Mines in the several mining districts.

J. G. SYMONS, Director of Mines.

REPORT OF THE GEOLOGICAL SURVEY OF TASMANIA, 1962.

The Chief Geologist, Terence D. Hughes, reports:—

The organization of the Geological Survey into three divisions, Regional; Economic; Engineering and Water Supply is almost complete. A. J. Noldart has been appointed Senior Geologist (Economic), the appointment to Senior Geologist (Regional) is proceeding and meantime Senior Geologist I. B. Jennings is supervising both the Regional and Engineering divisions.

Most geologists spent some time, particularly in the summer season, in regional mapping when a helicopter was used for transport over difficult terrains principally in the Cradle Mountain area. Mapping of the 1 mile series sheets is proceeding satisfactorily; the Zeehan sheet with its accompanying report was published during the year, the Devonport Sheet was ready for printing and the mapping of the St. Clair and Launceston Sheets almost complete. In the economic sphere most attention was paid to tin deposits, although developments at Savage River Iron-ore Deposits were carefully watched. On the Engineering side principal concern was with potential dangers in building sites and land slip problems.

Staff changes were slight. Senior Geologist A. H. Blissett resigned on 30th March, 1962. A. J. Noldart was appointed geologist and later Senior Geologist and S. M. Rowe was appointed geologist. R. D. Gee completed his geological scholarship and was appointed geologist and D. E. Leaman replaced T. J. Kennedy on a geological scholarship. I. H. Naqvi was appointed temporary geologist.

REGIONAL GEOLOGY

Senior Geologist I. B. Jennings reports:—

Regional geological mapping was continued on several 1 mile sheets during the year. Details of the areas involved are given below:—

(1) Mackintosh 1 mile sheet

During the summer 3 field parties led by Geologists V. M. Threader, K. L. Burns and R. D. Gee carried out mapping on this sheet. Two of the parties operated in difficult country on the plateau south and west of Cradle Mountain. The other party carried out a geological survey of an area around the headwaters of the Mackintosh and Lea rivers from a base camp established in the Vale of Belvoir. The field conditions in this area present considerable problems which could not be properly resolved even by use of helicopters.

Later in the year an access route from the Vale of Belvoir to Tullah was cleared out for use in later mapping in this district. A promising start has been made on this map sheet but a great deal of difficult mapping yet remains to be done.

(2) Burnie and Table Cape 1 mile sheets

Geologist R. D. Gee commenced mapping lithological boundaries on these sheets. Much work still remains to be done and the completion of this study is dependent upon the availability of topographic base maps.

(3) Devonport 1 mile sheet

K. L. Burns completed the field mapping on this sheet and all field data have been compiled. By the end of the year the final draft of the map

was in the hands of the drafting section ready for final drafting. A publication to accompany this map together with a number of detailed maps and sections was substantially complete by the end of the year.

(4) Zeehan 1 mile sheet

Final drafting and checking of this sheet was completed early in the year. The accompanying volume of explanatory notes on the geology of this area was also completed and issued.

(5) Lake St. Clair 1 mile sheet

Geologist A. B. Gulline continued mapping on this sheet for most of the year. He was assisted at various times by W. L. Matthews. Conversion of the topographic base map for the geological map was completed and by the end of the year the geological field work was approaching completion. It is anticipated that this map will be issued during the forthcoming year.

(6) Launceston 1 mile sheet

The bulk of the geological mapping in this sheet has been carried out by Geologist M. J. Longman. He was assisted for some weeks during the winter by W. L. Matthews and S. M. Rowe who individually mapped small areas within the sheet. By the end of the year the mapping was at least 75% complete but final compilation is delayed awaiting the topographic base map.

(7) Pipers River 1 mile sheet

In order to eliminate problems which may arise along the northern boundary of the Launceston sheet, A. B. Gulline spent some weeks mapping along the boundary of the Pipers River-Launceston 1 mile sheet. Further mapping in this sheet is anticipated upon completion of the Launceston quadrangle.

(8) Beaconsfield 1 mile sheet

As an extension of his economic study in the Beaconsfield district, Senior Geologist A. J. Noldart extended geological mapping over a wide area surrounding the mining district. This work will be incorporated into a future regional study of the Beaconsfield map sheet.

(9) Middlesex

The text for a volume of explanatory notes on the geology of the Middlesex sheet has been completed and forwarded for editing and printing.

ECONOMIC GEOLOGY

Senior Geologist A. J. Noldart reports:—

METALLIC MINERALS*Tin*

Considerable attention was again given to the investigation and testing of tin deposits in Tasmania mainly under the supervision of Geologist R. Jack. The diamond drilling programme on geophysical anomalies on the Razorback-Grand Prize prospect, Dundas, was completed but no significant mineralization was encountered.

In the north-east, investigations in the Branxholm tin deposits were completed. Percussion drill testing of Thureau's Deep Lead, St. Helens, continued throughout the year. Geological Surveys in conjunction with the Seismic Surveys of

the Bureau of Mineral Resources were carried out at Boobyalla, Mussel Roe and Great Frazer areas. An examination of a potential dredging area for alluvial tin was made near Gladstone. Specific investigations into tin occurrences at the Pyramid Mine, Upper Scamander, and McDougall's tin prospecting area, Tomahawk River, were also carried out by R. Jack. Some surface prospecting was carried out in the Anson's Bay locality by W. Pitulej.

Geologist A. J. Noldart carried out a survey of Thompson's Lode, Mt. Bischoff on behalf of a small tributary party.

Gold

Geologist V. M. Threader continued work on the Mathinna-Alberton gold deposits and a report is in course of preparation. Investigations on deposits at Miller's Prospect, Mt. Saddleback; Dan Rivulet, Mathinna; Little Den Goldfield, and the Lady Havelock Mine are the subjects of separate reports by V. M. Threader.

A. J. Noldart carried out an appraisal of the gold deposits of the Beaconsfield Goldfield.

Iron

Several visits were made to the Savage River area by Chief Geologist T. D. Hughes in an advisory capacity.

Silver-Lead

Exploration on the Comet Mine, Dundas, was concluded and diamond drilling commenced on Balstrup's Mine, Manganese Hill, Zeehan, under the supervision of R. Jack.

Manganese

Geologists S. M. Rowe and K. L. Burns investigated manganese deposits at Dial Range and in the Guildford district respectively and reports were submitted.

Chromite

A hand boring-percussion drilling exploration programme was completed on deep lead and alluvial chromite deposits at Anderson Creek, Beaconsfield, and a report prepared by A. J. Noldart.

Molybdenum

A brief inspection of a molybdenite occurrence at Devils Creek, Mt. Remus was made by K. L. Burns.

NON-METALLICS

Limestone-Dolomite

An appraisal of the limestone deposits at Mole Creek and on the Gordon River and an investigation of dolomitic occurrences in Main Creek, Savage River area, were the subject of reports by S. M. Rowe.

Barite

K. L. Burns made a brief inspection of barite occurrences in the Valentines Peak-Hummock area.

Clay

Geologist R. D. Gee prepared a report on clay deposits in the Wynyard area,

ENGINEERING GEOLOGY AND WATER SUPPLY

Senior Geologist I. B. Jennings reports:—

Numerous applications for water bores were received during the year. Geological advice on the selection of bore sites was furnished in most cases by Geologist W. L. Matthews.

Engineering geology enquiries related to surface water supply problems, bridgeworks, building foundations, landslips and other problems were also received. Details of the more important studies are given below:—

Water Supply

(a) Triabunna area

Geological reports were prepared on various aspects of schemes to supply water for the alginate industry at Triabunna. These involved a study of the geological factors affecting water storage at Racecourse Lagoon and examination of proposed damsites in the Prosser River near Orford.

(b) General

Geologist R. Jack inspected the foundation conditions for the dam being built in Flagstaff Gully, and gave geological advice on the various problems involved.

Bridgeworks

A preliminary geological report and a drilling programme were prepared in connection with the proposed bridge from Abattoirs Point to Courtoys Point.

Building Foundations

A geological study was made of the problems involved in siting a proposed large building at Cosgrove Park, Launceston. As a result of this a drilling programme was set out. By the end of the year the drilling was well advanced and an interim report submitted.

Difficulties were encountered in the excavation for the foundations for a press at the new particle board factory at Wesley Vale. Geological advice was sought and a report prepared.

Landslips

Following a study of a small landslip at Parklands, Burnie, a wide examination indicated that a good deal of potentially unstable land in the Burnie area has been built on. A report was furnished outlining this problem and a more detailed study of the whole problem will be made.

Geological advice and technical supervision of diamond drilling at Beauty Point were afforded in connection with a landslip affecting the West Tamar Highway.

General

Geologist M. J. Longman submitted reports on the following engineering problems in the Launceston district:—

- (a) Site for Launceston Grammar School.
- (b) Proposed Sewerage Tunnel.
- (c) Quarry Site, Mowbray.

PETROLOGY AND MINERALOGY

Petrologist and Mineralogist, G. Everard reports:—

Progress of regional surveys, and geological activity generally, resulted in a very considerable increase in material received, and individual

specimens, to the number of nearly 500, were added to the Departmental collection during the year.

Petrographic work was carried out on rock specimens obtained in the course of regional mapping of the Mackintosh quadrangle and in investigations into the—

Gordon River limestones
Dial Range manganese deposits
Brickmaking clay between Hamilton and Ouse
Cambrian Rocks of the Penguin area

On September 12th-14th the last named occurrence was studied in the field.

Petrographic examinations were made of individual specimens and suites of specimens from—

King William Saddle area
Camden
Pyramid Mine, Scamander.

Samples of concentrates were examined for the Chief Chemist and Metallurgist from the following localities—

Briseis Mine
Dorset Tin Mining
Ardlethan, N.S.W.
South Mt. Cameron
Glengarry
Penguin Iron Mines
Pyramid Mine, Scamander.

The number of rock and mineral specimens received for identification from members of the general public fell to 25.

Rock and mineral collections were supplied to schools, semi municipal bodies, &c.

GEOPHYSICAL SURVEYS

The Bureau of Mineral Resources continued geophysical surveys at the request of the Department of Mines in the following localities.

Savage River

The ground magnetometer survey of the Savage River-Long Plains area was completed during the year. Specific work included a survey of the Long Plains area and the country between Savage River and Long Plains.

North Eastern Tasmania

The combined seismic and gravity survey to establish the position of possible tin bearing deep leads was concluded at Boobyalla, Mussel Roe and Great Frazer areas.

MAPPING AND ENGINEERING DRAUGHTING SECTION

K. T. Kendall, Senior Draughtsman, reports:—
No staff movements occurred during the year.

Operations:

Considerable progress is reported on the Geological Atlas one mile series as a result of the intensified regional mapping programme.

Zeehan Sheet No. 50: Fair drawings completed, printed in sixteen colours.

Devonport Sheet No. 29: Compilation completed, fair drawings commenced.

St. Clair Sheet No. 59: Topographical base sheets prepared, geological compilation commenced.

Launceston Sheet No. 39: Geological compilation commenced,

Concurrent with the production of Zeehan Sheet No. 50, 29 monocolour geological maps, sections, diagrams and annotated photographs were prepared for inclusion in the accompanying Explanatory Report one mile Geological Map Series K/55-5-50 Zeehan which was published during the year.

Twenty-one monocolour geological maps, sections and diagrams were prepared and printed in the publication, Technical Reports No. 6 (1961).

Posters stressing safety in the handling of explosives were designed and prepared for use at various exhibitions held throughout the State. Cartographic work was also undertaken on behalf of the Regional Establishment at Wynyard.

The rest of the time was used in preparing topographical geological and engineering plans related to normal field services.

PUBLICATIONS

The following reports were prepared for publication in Technical Reports No. 7:—

Results of Drilling in the Razorback-Grand Prize Area, Dundas: W. N. MacLeod and R. Jack.

McDougall's Tin Prospecting Area, Tomahawk River: R. Jack.

Notes on Thompson's Lode, Mt. Bischoff: A. J. Noldart.
Miller's Prospect, Mt. Saddleback (S.P.L. 374): V. M. Threader.

Drilling Results, Braxholm Tin Deposits: R. Jack.
Little Den Goldfield: V. M. Threader.

Deep Drilling near Latrobe: K. L. Burns.

Gordon River Limestone Deposits: S. M. Rowe.

Barytes and Manganese near Guildford: K. L. Burns.

Geological Investigations in the Launceston Area: M. J. Longman.

(a) Launceston Grammar School Site.

(b) Proposed Sewerage Tunnel.

(c) Quarry Site, Mowbray.

Dolomite Deposit in Main Creek, Savage River Area: S. M. Rowe.

Black's Manganese Deposits, Dial Range: S. M. Rowe.

Report on Clay in the Wynyard District: R. D. Gee.

Limestone Deposit, Mole Creek Area: S. M. Rowe.

Limestone in the Vale of Belvoir: V. M. Threader.

Diamond Drilling at Dan Rivulet: V. M. Threader.

Alluvial Chromite Deposits, Anderson Creek, Beaconsfield: A. J. Noldart.

Prospecting at the Lady Havelock Mine: V. M. Threader.

Drilling at the Comet Mine, Dundas: R. Jack.

Dam Site, Flagstaff Gully: R. Jack.

Proposed Water Storage at Racecourse Lagoon, near Orford: I. Jennings.

Geological Factors Affecting Proposed Building at Cosgrove Park, Launceston: I. Jennings.

Preliminary Report on the Site for a Proposed Bridge from Abattoirs Point to Courtoy's Point: I. Jennings.

Landslips at Parklands, Burnie: I. Jennings.

Industrial Water Supply, Triabunna: I. Jennings.

Petrological Notes on Specimens from Various Localities: G. Everard.

(a) Mt. Arrowsmith Area.

(b) Middlesex Plains.

(c) Penguin.

(d) Mt. Barrow Area.

(e) Dial Range.

(f) Gordon River, South of Eagle Creek.

Results of Drilling for Water, 1962: W. L. Matthews.

Progress Report on the Exploration of the Savage River Iron Ore Deposits: J. G. Symons,

REPORT OF THE CHIEF CHEMIST AND METALLURGIST.

The Chief Chemist and Metallurgist, Mr. W. St. C. Manson,

M. Aus. I.M.M., reports:—

Analyses were made of ores, minerals, ferrous and non-ferrous alloys, clays, coal, mill and research products associated with ore dressing investigations.

Ore dressing research and associated mill operations continue to be a major activity. A predominant feature of the year's activities was the analyses of drill cores from New South Wales for tin, and research investigations for treatment of tin ore from Ardlethan.

Determinations made during the year show a marked increase for tin, which increased from 1721 to 5269.

Determinations made during the year were as follows:—

Types	Number
Aluminium	204
Antimony	39
Arsenic	29
Barium	3
Bismuth	8
Calcium	170
Carbon and Carbon Dioxide	120
Chlorine	4
Chromium	94
Copper	126
Fluorine	7
Gold	206
Iron	402
Lead	29
Magnesium	135
Mercury	4
Manganese	272
Molybdenum	16
Monazite	2
Nickel	16
Nitrogen	2
Phosphorus	220
Potassium	41
Qualitative Tests	34
Silicon	240
Silver	45
Sodium	41
Sulphur	301
Tantalum and Niobium	6
Tin	5,269
Titanium	199
Tungsten	45
Water Analyses	14
Vanadium	108
Zinc	21
Coal Analyses	16
Sieve Analyses	12
Water \pm 105°C	98
pH	25
Ash	95
Plating Solution Con- stituents	114
Chromite-Magnetic Con- centrate	31
Miscellaneous	104
Total	8,967

Research Investigations undertaken during the year were as follows:—

Types	Number
Tin	7
Chromite	14
Gold	1
Coal	1
Ceramic	8
Total	31

*Tin—Aberfoyle Tin Development Partnership,
Ardlethan Tin, N.S.W., Concentration Tests.*

R.396

Concentration tests were carried out on reject samples of diamond drill core from hole DP3 at Ardlethan, N.S.W., to obtain data relative to the recovery of tin by gravity concentration.

Composite samples were made up to represent each 50 feet of drill core. The samples were roll crushed and ball mill ground to minus 44 mesh in closed circuit screening. Sulphides were removed by flotation. The desulphidized ore was sized at 60, 100 and 200 mesh, and the four sized products tabled separately. Middlings were reground and returned to the next stage of concentration. The tests can be summarized as—

Sample No.	Composite Head % Tin	Combined Concentrates % Tin	Combined Tailings % Tin	% Recovery of Tin in Concentrate
R.396A/2	0.38	22.3	0.16	58.4
R.396B	0.81	44.1	0.30	64.1
R.396C	0.81	38.3	0.29	64.2
R.396D/2	0.24	30.2	0.12	53.3
Average	0.56	33.7	0.22	60.0

Tin—Briseis Tin N.L. Tin Seconds.

R.399

A small sample of tin seconds from the Valley Workings was examined and found to contain 27.9% by weight of magnetic minerals mostly ilmenite, but with a trace of magnetite.

The non-magnetic fractions contain 69-76% by weight of cassiterite. The remainder of the non-magnetics consist of approximately equal amounts of topaz and zircon, with a very small quantity of rutile.

Tin—Tomkin's Tin, Zeehan. Vanner Concentrate.

R.402

A small sample of vanner concentrate was received from Messrs. R. Fieldhouse and D. Dunkley. The vanner concentrate had the following composition:—

	%
Tin oxide	37.9
Lead, as oxide	11.5
Lead, as sulphide	0.5
Total sulphur	3.02
Sulphate (SO ₄)	5.59
Carbon Dioxide	3.0
Acid insoluble	23.6

Probable mineral composition was:—

	%
Cassiterite	37.9
Anglesite	16.8
Siderite	13.2
Pyrite	2.0
Galena	0.6
Acid insoluble	23.6
Acid soluble	4.5

Several methods of upgrading the vanner concentrate were suggested.

Tin—Aberfoyle Tin Development Partnership, Ardlethan, N.S.W. Concentration Tests.

R.413

Concentration tests were carried out on a bulk sample from wagon drilling at Ardlethan, N.S.W. The bulk sample contained 0.42% tin, and represented a total of approximately 2470 feet of drilling from 12 White Crystal and seven Wild Cherry bores.

Overall concentration results were:—

Product	Weight %	Assay % Tin	Distribution % Tin
Combined concentrates	0.436	60.9	63.3
Combined tailings	99.564	0.16	36.7
Composite Head	100.00	0.42	100.0

The method of treatment was briefly:—

1. The bulk sample was ground to minus 25 mesh by rod milling in closed circuit with a Hummer screen.
2. The ground ore was hydraulically classified and cycloned to give five products, of which four were concentrated. The slimes were not concentrated.
3. The three coarsest sized fractions were concentrated by tabling, desulphidized by flotation and then upgraded by tabling and magnetic separation.
4. Middlings from these fractions were ground and concentrates were obtained by tabling and upgrading in a similar manner.
5. The fine fraction of the ground ore was concentrated on a Buckman tilting deck, and upgraded by desulphidizing and tabling.

The total concentrate had the following composition:—

	%
Tin	60.9
Tungstic oxide	0.23
Sulphur	0.27
Lead	0.41
Copper	0.03
Bismuth	0.02
Zinc	0.02
Arsenic	0.12
Titanium dioxide	3.9

There was insufficient concentrate produced to investigate the removal of residual impurities.

Tin—Aberfoyle Tin N.L. Sand Tailings.

R.418

A sample of sand tailings from Aberfoyle Tin N.L., representing two weeks production, was examined to determine the nature of the tin losses, and to investigate the possible recovery of tin after regrinding.

About 75% of the tin in the tailings was finer than 200 mesh, and 65% was finer than 350 mesh. The presence of much of this material is due to inefficient sizing prior to concentration. The plant concentration units were operating quite efficiently on material in the size range suited to the units, thus the plus 120 mesh material assays only 0.08% tin, compared with 0.28% tin for the whole sample.

About 42% of the tin in the tailings was recoverable by gravity concentration, but it is unlikely that such recoveries would be possible on equipment at present installed at Aberfoyle.

The material coarser than 120 mesh contained 0.08% tin, and amounted to 77.6% by weight of the tailings. It is thus obvious that there is little scope for further recovery of tin by regrinding these fractions.

Tin—Storey's Creek Tin Mining Co., Dorset Tin Division. Dressing Shed Residues.

R.419

A sample of dressing shed residues was examined for recovery of cassiterite and monazite. The sample contained 3.96% tin, approximately 5% monazite; the rest of the sample consisted mainly of ilmenite and zircon.

Magnetic separation gave the following separation:—

Product	Weight %	Tin %	Tin Distribution %
Non-magnetics	33.84	10.7	91.4
Monazite concentrate	4.29	2.80	3.0
Highly magnetic ore	60.77	0.25	3.9

The monazite concentrate contained 90.1% monazite.

Gravity concentrate of the non-magnetics gave an overall recovery of 63.0% of the tin in a concentrate assaying 46.4% tin, plus a second concentrate assaying 12.8% tin and containing an additional 15.2% of the total tin.

The combined gravity concentrate contained 30.6% tin, and represented an overall recovery of 78.3% of the tin.

Tin—Renison Associated Tin Mines N.L. Mill Products.

R.423

Four mill products were received for examination. The mill sulphide tailing contained 0.36% tin, and infrazing, concentration of the infrazizer fractions on the Haultain superpanner and mineragraphic examination of the fractions showed presence of free and composite cassiterite in roughly equal amounts in the coarser fractions, and mostly free cassiterite in the finer fractions.

Magnetic separation of the sulphides indicated the possibility of upgrading this tailing by wet magnetic separation.

The mill gravity tailing was examined in a manner similar to that of the mill sulphide tailing. The cassiterite was present as both free and composite grains.

Sale tin concentrate: "firsts" and "seconds". Magnetic separation of sale concentrate "firsts" gave an increase in grade from 61.6 to 70.2% tin, with a recovery of 89.4% of the tin.

Magnetic separation of "seconds" concentrate gave an increase in grade from 39.5 to 69.1% tin, with a recovery of 88.7% of the tin. Removal of pyrrhotite and "dolomite" (pistomesite) by wet magnetic separation may be worth investigation.

Chromite—Anderson Creek, Beaconsfield.

R.398

Fourteen samples were tested for chromite and magnetic concentration. The relative quantities and compositions of the chromite concentrates obtained by gravity concentration and magnetic separation were:—

Sample No.	Weight Recovery	Cr ₂ O ₃	Fe	Al ₂ O ₃	TiO ₂	SiO ₂	MgO	Chromium/iron Ratio
R.398/1	0.9	60.5	15.2	6.9	1.0	1.3	8.6	2.7
R.398/2	0.1	57.4	17.9	6.9	0.4	2.0	8.5	2.2
R.398/3	1.5	59.6	15.5	7.1	1.6	1.3	8.6	2.6
R.398/4								
R.398/5	4.0	61.0	15.1	7.5	0.9	0.8	8.8	2.8
R.398/6	0.4	55.6	18.4	8.3	0.4	0.9	8.0	2.1
R.398/7	0.7	46.5	28.0	7.2	0.1	0.6	6.5	1.1
R.398/8	1.0	61.5	15.6	7.7	0.6	0.7	8.9	2.7
R.398/9	1.1	63.8	14.2	6.8	0.2	0.3	9.1	3.1
R.398/10	0.5	59.8	17.2	6.7	0.2	0.7	9.1	2.4
R.398/11	0.8	55.1	20.4	6.5	1.0	1.2	6.8	1.9
R.398/12	2.5	63.1	14.6	7.2	0.3	0.5	9.1	3.0
R.398/13	0.2	61.2	14.2	7.5	0.3	1.6	10.0	3.0
R.398/14	4.3	60.7	16.1	7.1	0.5	0.7	8.7	2.6

The chromite concentrates were essentially minus 30 mesh.

Magnetite concentrates contained 50-58% iron, 1.7-3.6% Cr₂O₃, and 0.02-0.26% Ni. The magnetite concentrates comprised from nil to 28% by weight of the samples.

A pilot plant scale concentration test on a composite sample involved agitation, desliming by cycloning, gravity concentration by tabling, magnetic separation of the iron minerals and chromite, and final upgrading of the chromite concentrate by further gravity concentration. It was found that rougher gravity concentrates must be closely sized before magnetic separation and final upgrading, if high grade chromite concentrates are to be produced.

Gold—Clutha Development Pty. Ltd. Dump Material, Middle Arm, Beaconsfield.

R.417

A sample of dump material containing 4.0 dwts. of gold per ton was tested for gold extraction.

Cyanidation without grinding resulted in an extraction of gold amounting to 2.36 dwts. per ton of tailings.

Cyanidation with grinding to minus 200 mesh size resulted in an extraction of gold amounting to 2.87 dwts. per ton of tailings.

Flotation of the material ground to minus 200 mesh size resulted in a concentrate containing 16.8 dwts. of gold per ton of concentrate. This is equivalent to a value of 2.08 dwts. of gold per ton of original material.

Lime consumption was 1.3-1.9 lb./ton of material.

Cyanide consumption was 6.3-7.5 lb./ton of material, but no attempt was made to determine the conditions for lowest cyanide consumption.

Coal—Stanhope Collieries. Table Discard.

R.416

Quantitative sampling of the table discard at the washery indicated that approximately one ton of good quality coal per day was being lost into the table discard. The coal lost is mostly in the minus $\frac{1}{4}$ in. size range, although larger pieces of coal discharging along the bottom baffle of the table are more obvious on inspection.

Ceramics—McHugh Bros. Clay for Pipe Manufacture.

R.400 and R.401

A sample of clay was submitted for testing for pipe manufacture by de-aired extrusion of different blends. The pipes were fired and salt glazed at McHugh's Works, and were then tested hydraulically at 14 lbs. per square inch water pressure for four minutes. The tests indicate that pipes containing more than 50% of "old clay" were satisfactory but pipes containing more than 50% of "new clay" were unsatisfactory.

Ceramics—Tests for Suitability for Industrial Purposes.

R.403

The sample contained 36% of minus 30 micron material, with an ignition loss of 13.9%, indicating a high percentage of clay. However, the brightness of this material was 51, and this low brightness precludes its use as a paper clay.

The material was tested for brick manufacture, by semi-dry pressing, and was found to be unsuitable.

Ceramics—Clay from Beaconsfield.

R.404

The material contained 81% of minus 20 micron material, with an ignition loss of 5.3%, which indicates no more than 38 per cent of clay, and thus precluding any use as a paper clay.

The material was found to be unsuitable for brick manufacture.

Ceramics—Hobart Brick Co. Clays and Shales.

R.407

Four samples of clay and one sample of shale were blended as requested and tested for brick production by de-aired extrusion. Blends containing "own cream clay", "top clay" and "own shale" were suitable, the only defect being in those blends with a high percentage of shale.

"Champion Light Clay" extruded with a very weak column with high drying and firing contractions.

"Champion Dark Clay" alone or blended with "Champion Light Clay" would not extrude successfully.

Ceramics—Clay from Prospect and Glen Dhu. McHugh Bros.

R.414

Samples of clay from Prospect and Glen Dhu were tested and compared with clays from Ballarat and Enfield for brick and pipe manufacture.

Clays LB1 and LB2 and blends LB1 and up to 50% of LB3 were suitable for pipe extrusion. Clays LB3, LB1 and blends of LB1 with sand were unsuitable for pipe extrusion.

Bricks extruded from LB1 and LB2 showed signs of core cracking, but this can be eliminated from LB1 by blending with LB3 or sand. Bricks extruded from LB3 are satisfactory, and dry and fire without cracks. Bricks extruded from LB1 fire with curved surfaces and are easily abraded.

Ceramics—Plastic Clay from Hamilton. McHugh Bros.

R.415

A sample of plastic clay from Hamilton was examined for de-aired pipe and brick extrusion. The material was found suitable for both purposes. A sample of shale from Granton was similarly tested and found suitable for both purposes. A sample of plastic clay from Dover was similarly tested and found to be unsuitable for pipe extrusion, but suitable for brick extrusion if fired below 1100°C. Vanadium efflorescence is high in the bricks.

Ceramics—Claystone from North Motton.

R.422

A sample of claystone was tested for brick production and was found to be unsuitable alone, but may be useful for blending with a plastic clay.

MINES AND EXPLOSIVES BRANCH.

Report of the Deputy State Mining Engineer and Deputy Chief Inspector of Mines and Explosives Mr. P. M. Johnstone, B.E., M.Aus.I.M.M.

THE MINES AND WORKS REGULATION ACT 1915

EMPLOYMENT

The average number of persons employed in the mining, metallurgical and quarrying industry during the year was 8708. This represents an increase of 215 which almost entirely occurred in metallurgical works producing aluminium and ferro-manganese. Otherwise there was a steady increase in the industry generally with the exception of coal and tungsten production. The demand for Tasmanian coal continued to fall and tungsten is in a world-wide depression. Employment in the industry has increased steadily in recent times, except for a setback in 1959, the number in 1952 being 6820. The net increase over the ten years' period was thus 28%.

ACCIDENTS

The number of registered accidents was 68 in which 66 persons were injured, a decrease of 41, and two killed. In calculating the rates per thousand, 166 employees in the total of 8708 were disregarded because their employers do not submit accident reports.

This considerable fall in the number of accidents occurred equally amongst underground and surface workers, but the fall in the incidence rate was much greater underground proportionately. The improvement was general aside from the tin mining group where a persistent relatively high rate is being maintained. One large opencut mine was distinguished in having no accidents during the year.

DESCRIPTION OF FATAL AND SERIOUS ACCIDENTS

Fatal

- P. Turis, E.Z. Co., Rosebery: Run down by ore train underground.
- D. Brown, Endurance Tin Mine, South Mt. Cameron: Buried by fall of earth in opencast.

Serious

- R. A. Wilkes, Mt. Lyell Co.: Struck by steel handle on churn drill; broken ribs and abrasions.
- D. W. Lee, Aberfoyle Tin: Fell through railing on belt conveyor to the ground; broken ribs and lacerated head.
- C. Griffiths, E.Z. Co., Risdon: Hand drawn into fan whilst cleaning it with rake; severe lacerations.
- J. McLachlan, E.Z. Co., Rosebery: Driver's leg crushed against wall whilst trying to escape from derailed locomotive underground; broken leg.
- E. Bean, Cornwall Coal Co.: Twisted ankle whilst carrying heavy timber; broken.
- K. L. G. Bullock, Cornwall Coal Co.: Ankle jammed between skips when foot slipped on coupling; broken.
- R. F. Hill, Mt. Lyell Co.: Struck by travelling overhead crane; broken leg.
- M. C. Raspin, Cornwall Coal Co.: Foot slipped whilst lifting oxygen cylinder; slipped disc.
- A. T. Barker, E.Z. Co., Rosebery: Acetic acid splashed in eye while assaying.
- J. Pascoe, E.Z. Co., Rosebery: Bored into gelignite in butt; explosion caused loss of one eye, broken collar bone and lacerations to face and head.
- H. Reiter, E.Z. Co., Rosebery: Pin twisted in hand when struck with spalling hammer; broken hand.
- K. Fitzmaurice, Boomer Quarry: Arm caught in conveyor belt pulley whilst cleaning; broken.
- J. Petschar, Aberfoyle Tin: Struck by fall of ground while boring in rise; broken arm.
- P. C. Jones, Endurance Tin Mine: Engulfed in fall of earth in opencast; extensive bruises, injured knee and shock.
- P. Horne, E.Z. Co., Risdon: In stepping onto locomotive foot became jammed between crank and coupling rod; broken.
- T. M. Kelly, Renison Tin Mine: Struck by pipe falling from stack; cracked bones in leg.
- T. Murphy, Comalco: Overturned tray of carbon stubs; broken arm.
- V. Gualten, Aberfoyle Tin: Bored into hole containing gelignite; explosion injured eye.

LOCATION OF ACCIDENTS

Type of Mining	Underground Number of Persons—				Surface Number of Persons—				Total Number of Persons—			
	Employed	Killed	Injured	Per Cent Injured	Employed	Killed	Injured	Per Cent Injured	Employed	Killed	Injured	Per Cent Injured
Coal	145	...	2	1.4	82	...	1	1.2	227	...	3	1.3
Copper	67	...	...	...	1,537	...	11	0.7	1,604	...	11	0.7
Silver-lead-zinc	344	1	10	3.2	418	...	4	1.0	762	1	14	2.0
Tin and Tungsten	240	...	23	9.6	461	1	7	1.1	701	1	30	4.4
Quarries, Works, &c.	...	...	...	...	5,248	...	8	0.2	5,248	...	8	0.2
Total	796	1	35	4.5	7,746	1	31	0.4	8,542	2	66	0.8
Not reported	...	...	...	...	166	...	...	...	166	...	...	...
					<u>7,912</u>				<u>8,708</u>			

COMPARATIVE TABLE SHOWING RATES PER THOUSAND KILLED OR INJURED

Period	Number of Persons Employed	Number of Accidents	Number of Persons			Number per Thousand		
			Killed	Injured	Total	Killed	Injured	Total
1892-1930*								
1931-1940†								
1941-1950‡								
1951	5928	49	2	50	52	0.337	8.335	8.772
1952	6820	62	1	61	62	0.147	8.944	9.091
1953	7370	73	6	67	73	0.801	9.091	9.892
1954	7289	75	3	72	75	0.411	9.877	10.289
1955	7095	98	4	96	100	0.563	13.531	14.094
1956	7692	130	4	126	130	0.520	16.381	16.901
1957	8137	79	...	80	80	...	10.786	10.786
1958	8309	103	3	100	103	0.399	13.303	13.702
1959	8236	92	2	91	93	0.269	12.256	12.525
1960	8299	93	1	92	93	0.133	12.309	12.443
1961	8493	108	1	107	108	0.119	12.720	12.839
1962	8708	68	2	66	68	0.234	7.726	7.961

* See Report of Director of Mines—1954.

† See Report of Director of Mines—1956.

‡ See Report of Director of Mines—1960.

INCIDENCE OF ACCIDENTS

Place and Cause of Accident	Number of Persons Killed	Number of Persons Injured (Incapacitated for over 14 days).	Place and Cause of Accident	Number of Persons Killed	Number of Persons Injured (Incapacitated for over 14 days).
<i>Section A.—Metalliferous Mines—</i>			(b) Explosives (dynamite, &c.)	...	...
1. Below Ground:			(c) Falls of Earth	...	...
(a) Explosions	...	2	(d) Other Causes	...	2
(b) Falls of Ground	...	5	5. Above Ground:		
(c) Falling down Shafts, &c.	...	2	(a) Machinery in Motion	...	...
(d) Other Causes	1	24	(b) Other Causes	...	1
2. Above Ground:			Total Coal Mines (B)	...	3
(a) Machinery in Motion	...	2	Total All Mines (A and B)	2	66
(b) Other Causes	1	8			
3. Accidents in Batteries, Ore-dressing, Smelting and other Metallurgical Works, &c.	...	20			
Total Metalliferous Mines (A)	2	63			
<i>Section B.—Coal Mines—</i>					
4. Below Ground:					
(a) Mine Explosions (fire damp, &c.)	...	...	

INSPECTION

In July Mr. R. C. Vivian took up the post of Inspector of Mines and Explosives, Queenstown, vice Mr. J. B. Braithwaite who was transferred to the vacancy at Hobart. Mr. J. S. Mason, Inspector of Mines and Explosives on the coal-fields, resigned in October and his place was taken by Mr. D. Besford, in a temporary capacity.

EXPLOSIVES ACT, 1916

The following quantities of explosives and blasting agents were imported during the year at the ports shown:—

	Currie	Hobart	Launceston	Burnie	Strahan	Ulverstone	Total
Nitro-compounds (lb.)	57,550	396,565	701,950	393,800	1,169,400	...	2,719,265
Detonators, &c.	10,000	...	7,400	...	36,300	2,327,550	2,381,250
Ammonium Nitrate (lb.)	...	...	...	...	...	...	558,780

There were 37 shipments landed, an increase of eight, and each was inspected on arrival. The large increases of more than 700,000 lb. in imports of nitro-compounds occurred at the ports of Hobart and Strahan. In the first port it is a reflection of increased quarrying activities, and in the latter it was due to a large mining company partly reverting from the use of ammonium nitrate back to gelnite. Some difficulties were experienced with an ammonium nitrate-mollasses-water mixture loaded into plastic tubes in wet holes. It is expected that further experiments will solve the problem. The use of the ammonium nitrate-fuel oil explosives (A.N.F.O.) has spread rapidly and 13 permits to manufacture have been issued. Two permits were in respect of underground usage which is made possible by special loading machines. These are of two types, the one loading by air blast and the other by air pressure in a vessel. In either method A.N.F.O. is loaded quickly and compactly into small diameter drill holes of any length. Test firings are to be made in the two mines early in 1963.

In the 1961 report a vast increase in the number of detonators imported was noted, and the same remark is made again this year. The number imported has increased 152% in the last two years and is indicative of the increased activity in the mining and quarrying industry, and in miscellaneous blasting for construction and land clearing.

ACCIDENTS

Two boys were injured in the face and hand by exploding detonators. In one instance a cracker had been inserted into the detonator. On two occasions miners bored into butts containing fracteur which thereupon exploded. Eye injuries only were sustained, one eye being lost.

INSPECTION

Approval was given to the packing of detonators in fibre-board boxes of 100. The use of fibre-board cases for gelnite has proved entirely successful, and trials are being conducted with polythene liners for waterproofing. The further

usage of anti-hail rockets has disclosed undesirable features in their construction, leading to dangerous flight. Investigations are proceeding.

Much publicity was given to explosives during the year in an attempt to educate the public in the recognition of, and the dangers of tampering with, explosives. This consisted of the distribution of dodgers, presentation of displays, and exhibits at agricultural shows in several towns. The co-operation of television and radio stations was most valuable and deeply appreciated. Short courses of instruction were given to police cadets.

An additional Inspector of Explosives (Mr. H. R. Powell) was appointed and stationed at Hobart to assist in the increasing number of inspections required in the south and to some extent in the north. Mr. J. C. Goodrick resigned as Inspector of Explosives and Magazine Keeper, Hobart, and was replaced by Mr. G. Jobson.

PROSECUTION

A storekeeper was convicted of keeping explosives for sale without a licence, and for keeping explosives and inflammable liquids together. Fines and costs amounts to £32 5s.

INFLAMMABLE LIQUIDS ACT, 1929

The following quantities in tons of inflammable liquids were imported in bulk during the year through the ports shown:—

	Hobart	Devonport	Bell Bay	Burnie	Total
Aviation Gasoline	650	.....	1,128	.....	1,778
Benzol	800	.....	.....	.....	800
Kerosene, Aviation	5,408	.....	.....	.....	5,408
Kerosene, Lighting	870	765	.....	.....	1,635
Kerosene, Power	730	1,948	.....	.....	2,678
Motor Spirit, Premium	44,337	19,262	24,146	6,176	93,921
Motor Spirit, Regular	26,354	11,874	15,812	7,042	61,082
Total	79,149	33,849	41,086	13,218	167,302
Tank Ships (No.)	27	13	9	5	54

There were seven more tank ships than in the previous year and the quantity landed was 25,143 tons more.

INSPECTION

At the 30th June the number of licensed premises was 1932, an increase of nine in 12 months. During the year 327 applications for approval to construct or alter premises were dealt with. A major event was the inauguration of a dracone service between Hobart and Lady Barron which involved the construction of a loading terminal in Hobart and a bulk depot and discharge arrangements at Lady Barron. Other bulk depots constructed or enlarged were at Burnie (3) and Self's Point (2) as well as six minor ones throughout the State. Approval was given to a new and much improved, but still temporary oil berth at Devonport.

Inspectors took part in Fire Prevention Week organized by the Australian Fire Protection Association.

PROSECUTION

A storekeeper and fruit-processing company were convicted of illegally keeping inflammable liquid, fines and costs being £5 and £14 14s. 6d. respectively.

DRILLING

DIAMOND DRILLING

Number of Holes	Total Footage	Object
7	1528	Mineral Exploration—Zeehan and Dundas.
3	1310	Mineral Exploration—Mathinna.
2	839	Coal Resources.
7	384	Building Foundation Testing.
3	211	Engineering Investigation of Landslip.
22	4272	

CHURN DRILLING

Number of Holes	Total Footage	Object
16	1548	Water Boring—Hamilton District.
2	109	Water Boring—New Norfolk.
26	2299	Water Boring—Huon.
1	70	Water Boring—Kingston.
7	504	Water Boring—Brighton.
2	146	Water Boring—Sidmouth.
4	153	Building Foundation Testing.
17	1104	Outlining Limestone Deposit.
33	2531	Testing Alluvials for Tin.
1	34	Testing Alluvials for Chromite.
109	8498	

DIAMOND DRILLING

Three crews were engaged on mineral exploration and civil engineering investigations. One crew continued drilling on geophysical anomalies in the Dundas tinfield and was then transferred to lead-zinc prospects in the same district. This drilling was notable for the very bad ground encountered which made core recovery low and difficult. Later the crew moved to Manganese Hill at Zeehan where drilling conditions are reasonably good. The Goldfields No. 10 drill used gave good service but as deeper holes were called for at Zeehan it became apparent that a larger machine would be required. Another crew was engaged in the Mathinna goldfields to probe below reef outcrops. At the shallow depths drilled the slate country rock proved unexpectedly incompetent and a satisfactory core recovery was difficult to obtain. The third crew at Fingal completed a hole through the coal measures at 710 feet and carried on testing the same measures. Both this work and the search for gold reefs at Mathinna were interrupted by urgent calls from

civil engineering projects. One crew drilled to test for the foundations of a pump station on the West Derwent water scheme and for a multi-storey building at Cosgrove Park. The other was engaged in investigations into the mechanics of a landslip at Beauty Point. New equipment was used in foundation test work consisting of a triple tube core barrel which successfully delivered a core of clay enclosed in a plastic tube.

To cope with the tendency towards deeper mineral targets, orders were placed for two new drills, of 1500 and 3000 feet capacity respectively. These will widen the scope of the equipment which has hitherto been restricted to machines ranging in capacities from 100 to 1000 feet.

CHURN DRILLING

Three crews were engaged on boring for water and testing alluvials. A few pilot holes were also drilled through unconsolidated ground for foundation testing by a diamond drill. Two crews were mainly occupied in boring on farms for stock and domestic water supplies. In the

Huon district bore depths varied between 52 and 163 feet, two holes out of the 26 drilled being dry. Outputs ranged from 150 to 450 gallons per hour. The results obtained in the Brighton, New Norfolk, Kingston and Hamilton districts were similar, four holes out of 26 being dry. All this work was done with Goldfields G33 machines. The testing of Thureau's Deep Lead at St. Helens was continued with the Ruston Bucyrus 22RW drill. Depths bored varied between 15 and 170 feet, the drive shoe diameter being $7\frac{1}{2}$ inches, and satisfactory core recoveries were obtained. Considerable difficulty was experienced in thick beds of clay which swelled on exposure to air and water. The casing of $6\frac{3}{8}$ inches outside diameter was squeezed so tight as to be virtually immobilized. The problem was overcome by installing a power-driven hydraulic jacking system having two 50-ton jacks. To outline a limestone deposit a G33 drill was used to bore through clay overburden varying in thickness from 17 to 116 feet to the top of the limestone and take therefrom a shallow chip sample.

REPORTS OF THE MINING ENGINEERS AND INSPECTORS OF MINES AND EXPLOSIVES

**Mr. L. F. Egan, A.M.Aus.I.M.M., Burnie,
reports:—**

EMPLOYMENT

As in the previous year a rise in employment was recorded, the average figure of 1008 representing an increase of 34 men. In this regard expanded activities at Australian Titan Products involved a progressive rise in employment from 433 in the March quarter to 450 in the December quarter.

ACCIDENTS

Two accidents occurred during the year inflicting injuries which caused absence from work for more than 14 days. One man suffered wrenched neck muscles and a cut lip when an unsecured extension ladder slipped and fell on him as he was passing.

In the other case an employee taking a short cut through an area still under construction accidentally stepped into an uncovered acid drain and received severe acid burns to his left foot.

SAFETY AND HEALTH

Frequent and regular inspections were made of all mines, works, and quarries. On all open cut projects and quarries close attention was paid to the maintenance of scat-free brows and safe working batters. In this regard gravel pits were a cause for concern, the practice having been developed of undercutting the faces with front-end loaders. A characteristic of the gravel where this undercutting of faces is prevalent is the occurrence of a layer of silty overburden varying between 3 feet and 5 feet in depth. Hence the desire of operators to win as much of the saleable gravel as possible without disturbing the waste overburden. Attention is being given to methods of eliminating these overhangs to give safer working conditions. Eye protection by special spectacles was another safety feature actively encouraged.

Dusty atmospheric conditions on all works and crushing plants were kept under constant review. At one crushing plant dust samples were taken with a Konimeter from time to time. Remedial measures required consisted of the introduction of additional water sprays and air ducts and, in cases of exposures of short duration to dust-laden atmospheres, the use of dust masks.

PROSPECTING

Three companies were engaged in exploration using geological and geophysical methods and diamond drilling at the Savage River (5 men) for iron ore, and at Mts. Bischoff, Lindsay, and Cleveland (21 men) for tin.

AID TO MINING

At Waratah financial assistance was continued to a 4-man party of tributors developing a block of ore by rising and driving on a lode in Thompson's workings. Assistance was also afforded another operator to enable him to purchase a suction hose for his sluicing plant. Supervision

was exercised over mining operations on the Mt. Bischoff Tribute area. In addition Government mining and milling plant on the field was kept under observation and repairs and maintenance arranged as necessary.

**Mr. L. W. Morris, A.W.A.S.M.,
M.Aus.I.M.M., Launceston, reports:—**

EMPLOYMENT

The average number of persons employed in the industry was 1644 of whom 213 were employed underground.

ACCIDENTS

There were 25 accidents reported as having caused 14 days or more lost time. Of these one was fatal, 3 caused by falling ground and 10 were underground trucking accidents. The fatal accident occurred at the Endurance Tin Mine, South Mt. Cameron, when the south wall of the opencast collapsed following heavy rain. The miner was buried by the fallen earth and water which travelled the full width of the open cut. The unusually large proportion of trucking accidents underground were of a minor nature, but are worthy of study by the mine management.

HEALTH AND SANITATION

Health and sanitation in the mines continues to be satisfactory. Crib rooms, bathing facilities and change rooms in operating mines, though not equipped to a high standard, are adequate. Ventilation in the underground mines has been progressively improved during the year.

EXPLOSIVES AND INFLAMMABLE LIQUIDS

Explosives and inflammable liquid storages have been inspected periodically to keep them up to the required standards. The removal to the new magazine at Dilston was completed early in the year. Construction of explosives magazines and inflammable liquid installations were inspected and, when conforming to approved plans, recommended for licensing.

Ten shipments of explosives and 10 shipments of inflammable liquids were landed without untoward incident, under the supervision of Mr. D. R. Bonham, Inspector of Explosives. The shipments included one dracone which was towed from Hobart to Lady Barron on Flinders Island, where a bulk terminal had been completed by B.P. (Australia) Ltd. It is noted that the use of Ammonium Nitrate Fuel Oil mixture, as an explosive, is having an effect on the quantity of explosives handled through the magazines.

**Mr. J. B. BRAITHWAITE, B.C.E.,
B.M.E., M.Aus.I.M.M., A.M.I.E. Aust.,
Hobart, reports:—**

EMPLOYMENT

The average number employed in the industry was 3005 a fall on last year's number, mainly owing to a decrease of 84 in the number employed by the Electrolytic Zinc Company of Australasia Ltd.

ACCIDENTS

Only four accidents were reported during the year and all occurred at the Electrolytic Zinc Company works at Risdon. Of these only two were serious, one a crushed hand caught in a fan and the other a crushed foot caught in the connecting link of a diesel locomotive.

HEALTH AND SAFETY

All works and quarries in the area were visited regularly with particular reference to safety and health. The provisions of the Mines and Works Regulation Act were extended to cover the work on the West Derwent Water Scheme and this was included in the regular inspections. Several complaints were received of damage or danger from blasting for other than mining purposes and, although no action could be taken under the Mines and Works Regulation Act, the site was visited and the contractor advised on safety measures.

EXPLOSIVES AND INFLAMMABLE LIQUIDS

Explosives magazines and inflammable liquids installations were inspected before the issue of licences and to ensure compliance with the Acts and Regulations. Several men were examined and issued with Shot-Firer's Permits. More quarries became interested in the use of Ammonium Nitrate-Fuel Oil as an explosive and permits for its use were issued after demonstration of the procedure.

Mr. D. Besford, M.Aus.I.M.M., Hobart, reports:—

EMPLOYMENT

The average number of persons employed at mines and works operating under the Mines and Works Regulation Act was 429, an increase of 2 compared with the previous year. A decrease occurred in the coal mining industry where the average number of employees fell by 31.

ACCIDENTS

The number of accidents reported was three of which two were serious. In each case the miner lost his footing whilst carrying a heavy load, one breaking his ankle and the other slipping a disc.

SAFETY

Attention has been directed to the safe working of all places, regular inspections have been made of all places and all mines have been found to be free of gas. Hygrometer readings were taken in all working places and found to be within the requirements of the Act.

Mr. R. C. Vivian, A.C.S.M., A.M.I.M.M., A.M.Aus.I.M.M., Queenstown, reports:—

PROSPECTING

A Departmental diamond drill completed prospect drilling at the Razorback area, Dundas, then moved to the Comet Mine to complete two holes.

The drill was then moved to Manganese Hill at Zeehan and was engaged there for the remaining part of the year.

EMPLOYMENT

The average number of persons employed in the industry was as follows:—

Quarry or Opencut	255
Other Surface	1,756
Underground	437
Total	2,448

This shows an increase of 30 men working underground but an overall decrease in the working force of 4 persons compared to the previous year.

ACCIDENTS

There were 29 accidents reported during the year, including one fatal accident and eight serious accidents. The fatal accident occurred underground and was caused by a train striking the man involved.

Of the eight serious accidents, four occurred underground and four on the surface. Underground, a finger injury was caused by falling rock, a leg injury by the derailment of a train, a hand injury from the use of tools, and loss of sight in one eye due to an explosion of gelignite resulting from a breach of the Regulations by the miner concerned. On the surface, a leg and a foot injury were caused by falling objects, a leg injury by machinery, and multiple injuries when the lorry a man was tipping rolled down the end of a waste dump.

Of the remaining 20 minor accidents, injury to hands, fingers and torso were the most prevalent, with falling rocks, tools and other objects, and the act of slipping or tripping, being the major causes of the accidents.

Generally, this brief summary of the parts of the body injured and causes of injury shows the necessity for the continued provision and wearing of safety clothing and equipment, and as well, the attention required regarding the making safe of working places underground, the prevention of falling objects on surface and good house-keeping to improve conditions underfoot both underground and on surface.

HEALTH AND SAFETY

All mines, quarries and works were visited with attention being directed to the health and safety of employees. Ventilation in the mines is of a satisfactory standard, however, there is room for improvement in some reduction plants which is being attended to. Guards over and around moving machinery parts were maintained or improved, and installed where necessary.

AID TO MINING

Aid to three parties mining tin ore continued.

REPORT OF THE RINGAROOMA AND CASCADE WATER BOARD FOR THE YEAR ENDED 31st DECEMBER, 1962

SIR,

We have the honour to submit the report of the Ringarooma and Cascade Water Board for the year ended 31st December, 1962.

As reported last year the closure of the Ringarooma section of the Race was being deferred pending alternative water supplies being provided for the townships of Branhholm and Legerwood. A water scheme to serve both towns was completed early in the year and the Ringarooma Race was closed by diverting water intakes and by breaching sections of the Race so that any accumulated water would return to natural water-courses.

Briseis Tin N.L. which conducted mining operations at the Valley Mine near Derby using water from the Cascade section of the Race finally ceased operations towards the end of 1961. The Board gave consideration to the future of this section of the Race and it was decided to abandon the system except for minimum maintenance of the Cascade dam and the Mount Paris dam in view of the importance of these dams to any future development of the mining industry in the district.

The loss for the year was £782. Future deficits will relate to interest charges on the original capital cost of the Race System which was purchased from Briseis Consolidated No Liability in 1947 for £10,000; and maintenance of the two dams.

The Board will continue for this purpose under the provisions of the Ringarooma and Cascade Water Agreement Act 1947.

It is regretted that the accumulated operational losses of £61,000, continuing high annual maintenance expenditure, the need for capital expenditure on sections of the System, and permanent loss of revenue made the closure of the Race system unavoidable.

We have the honour to be, Sir,

Your obedient servants,

J. G. SYMONS, Chairman.

H. K. TURNER, Member.

N. P. EDWARDS, Member.

The Hon. the Minister for Mines.

RINGAROOMA AND CASCADE (WATER) SUSPENSE ACCOUNT.

Statement of Receipts and Payments for the Year Ended 31st December, 1962.

<i>Receipts.</i>	£	s.	d.	<i>Payments.</i>	£	s.	d.
Town supplies	234	15	0	Ringarooma Race—			
Rent of cottage	26	0	0	Wages including allowances for long			
Miscellaneous	3	8	7	service leave	412	15	7
				Supervision	60	0	0
Total revenue	264	3	7	Maintenance	17	2	8
Balance (Loss)	782	4	1	Insurance	6	1	1
				Rent private land	4	0	0
				Cascade System—			
				Maintenance of race	69	19	0
				Inspection of dams	37	10	0
				Interest on capital cost of Ringarooma			
				and Cascade Water System	438	19	4
	£1,046	7	8		£1,046	7	8

REPORT OF THE MOUNT CAMERON WATER RACE BOARD FOR THE YEAR ENDED 31st DECEMBER, 1962

SIR,

We have the honour to submit the report of the Mt. Cameron Water Race Board for the year ended 31st December, 1962.

Production of tin oxide from water supplied was 42 tons as compared with 40.483 for 1961. One party obtained water on the royalty scale of charges based on the value of tin concentrates produced and two parties contracted for supplies on the Cash or Fixed scale of charges where a cash payment is made for each sluichead of water delivered. Revenue from this source was £2734 as compared with £2717 for 1961. The total number of sluicheads of water supplied under the Royalty Scale was 116 and under the Fixed Scale 2308.

It is pleasing to again record a small surplus of revenue over operational costs. This resulted from increased revenue from sale of water for the greater part of the year. Towards the close of the year the principal user of water reduced the scale of operations and contracted for a lesser supply of water. As a consequence there was a fall in revenue collected during the last few months.

Expenditure was £2827 which represented a small increase as compared with 1961.

Rainfall at the intake of the Race was excellent and was well distributed throughout the year. Sufficient water supplies were available for all requirements. The Race system was maintained

in good order and the use of weedicides enabled water weeds to be controlled and permitted the free flow of water in the races.

The Board expects that revenue during the coming year will decline as a result of reduced operations by the principal user of water and unless there are unforeseen developments a loss on operations appears unavoidable.

It is desired to record appreciation of the services of the Manager and Channel Keepers.

We have the honour to be, Sir,
Your obedient servants,

J. G. SYMONS, Chairman.

H. K. TURNER, Member.

H. C. LAWRY, Member.

The Hon. the Minister for Mines.

MT CAMERON WATER RACE SUSPENSE ACCOUNT

Statement of Receipts and Payments for the Year Ended 31st December, 1962.

Receipts.			£	s.	d.	Payments.			£	s.	d.	
Sale of water—						Salaries and wages	2,635	8	0			
Fixed or Cash Scale	£2,677	10	0			Pay-roll tax	65	17	8			
Royalty Scale	56	17	9			Car allowance—Manager	50	10	6			
Domestic use	91	10	0			Insurance	45	1	6			
				2,825	17	9	Tools and general requisites	25	5	0		
Hire of pipes				30	0	0	Freight and cartage	4	18	6		
							Total	2,827	1	2		
							Balance—Profit	28	16	7		
								£2,855	17	9		

STATISTICS FOR THE YEAR ENDED 31st DECEMBER, 1962.

Registered Rainfall.		Production.				
Great Mussel Roe	41 inches 74 points	Tin oxide produced—				
Little Mussel Roe	42 inches 54 points		tons	cwt.	qrs.	lbs.
		Royalty scale	8	1	19	
		Fixed scale	42	9	1	
		Total	42	17	2	19
Water Services.		Employment.				
Average number of claims supplied per week	3	Average per week—				
Greatest number supplied in any one week	4	Royalty scale			1	
Sluiceways supplied:—		Fixed scale			10	
Royalty Scale	116	Total			11	
Fixed Scale	2,308					
Total	2,424					